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Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name Registered U. S. Patent Office.

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May 24, 1930

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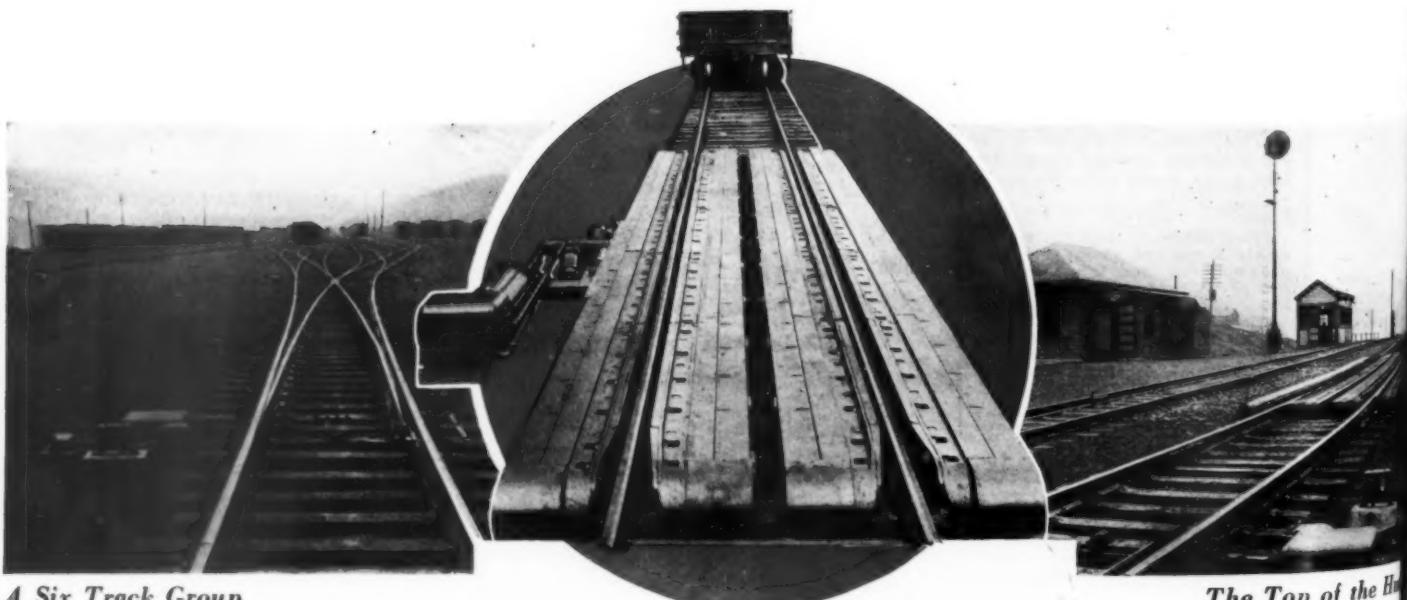
The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service

For Faster

At Pitcairn

INCREASED speed of operation at Eastbound Pitcairn Yard on the Pennsylvania, has resulted from the installation of "Union" Model 28 Electro-Pneumatic Car Retarders, one of the many improvements providing increasingly efficient service for the shipper.

This retarder equipped yard, which was placed in service November 1, 1929, is used for high-class traffic and approximately 90 per cent of all cars handled are loads consisting of merchandise and manufactured products.



A Six Track Group

The Top of the H

Railway Age

Vol. 88, No. 21

May 24, 1930

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The Government, the Railways and Business

HERE is a remarkable contrast between the efforts now being made by the railways to promote the welfare of the public, and the efforts being made by public men, largely backed by business interests, to prevent the railways from prospering and functioning efficiently.

Last fall President Hoover asked the railways and other industries to maintain or even increase their expenditures for improvements in order to support general business. The report made by the Bureau of Railway Economics at the meeting of the Association of Railway Executives last week shows that in the first quarter of 1930 the railways did more than they promised to do. They made capital expenditures for equipment and additions and betterments aggregating almost \$224,000,000, or about \$12,000,000 more than they originally estimated they would make. The increase in their total capital expenditures over the first quarter of 1929 was 76 per cent, the increase in expenditures for the improvement of roadway and structures being 51 per cent, and in expenditures for new equipment 137 per cent. General business has not been good; but it certainly would have been somewhat worse if the railways had reduced their expenditures instead of increasing them.

What the railways have done recently is the result of extraordinary efforts on their part to help maintain business. Ever since they were returned to private operation, however, they have been engaged constantly in improving their properties and service for the purpose both of effecting economies and of promoting the general prosperity. Without the improvements that they have made in their freight service the prosperity which the nation has enjoyed most of the time within recent years would have been impossible.

Government Treatment of Railways

Let us now briefly consider the kind of policies the government has been applying and is threatening to apply to the railways, and the conditions with which, in consequence, the railways are at present confronted.

The railways were returned to private operation ten years ago under a law assuring them that the Interstate Commerce Commission would so regulate their rates as to enable them to earn a fair return, but they have not earned such a return in a single year. In 1929, while

handling a record-breaking freight business, they earned—excluding back mail pay—about 4.8 per cent. Thus far in 1930 they have earned at the rate of about 3.50 per cent. The commission, in an effort to get a low basis for the regulation of rates, attempted to make a valuation in a way that the Supreme court held was contrary to law. Now a bill has been introduced in Congress, with the backing of certain members of the Interstate Commerce Commission, to provide by law for the making of "rate bases" in substantially the way that the Supreme court held unlawful.

The Transportation act provided that the Interstate Commerce Commission should make a general plan for consolidation of railroads. The commission, after ten years, made such a plan, but because certain parts of it are not popular a resolution has been introduced in Congress to suspend the entire process of consolidation. The courts adopted certain rules according to which the games of valuation and consolidation were to be played. It is now proposed to change the rules lest the results prove favorable to some railways.

As a result of the increased competition of motor vehicles on highways built at public expense the annual passenger earnings of the railways are now \$450,000,000 less than they were ten years ago. The railways also have been losing a substantial amount of freight business to highway carriers. In an effort to protect their earnings many railways have been engaging in the operation of motor coaches and trucks. An attempt is now being made in Congress to secure passage of a provision which would prevent railways from operating motor vehicles on highways.

Responsibility of Business Men

The railways have lost a large amount of freight business to steamships operating through the Panama Canal. A bill is now pending in Congress absolutely to prohibit railways from making lower rates for longer than for shorter hauls in order to make sure that they never will be able to meet this steamship competition.

The railways can transport freight cheaper than carriers upon almost any improved river or canal, if in the cost of inland water transportation there are included the taxes paid by the public for improving and maintaining the waterways. Nevertheless, there is

being carried on a nation-wide campaign for extensive development of inland waterways. The principal propagandists for the waterways are high officers of the national government, but they are ably backed by business men who profess on principle to be opposed to government competition with private business, but who show a philanthropic willingness to let the public tax itself to reduce their freight rates. Both the political and business propagandists of inland waterways constantly give assurances that they do not wish to hurt the railways, but railway officers who have studied the subject are unanimous in the opinion that practically every ton the waterways take will involve a reduction in the traffic that otherwise would move by rail.

Those who are directly or indirectly responsible for present government policies affecting transportation are doing all they can to so impair the earning capacity of the railways as to make necessary either a general advance of railway rates or a reduction of railway expenditures and a deterioration of railway service. Business men constantly criticize politicians for government interference with business, but business men themselves are principally responsible for the policies adopted by politicians affecting transportation. The railways occupy the anomalous position of undergoing constant government and public harassing, and yet of being one of the first industries called on for help, by both government and public, in time of stress. When business men actively oppose instead of helping promote government transportation policies that are unjust and harmful to the railways and contrary to the public interest, they will be in a better position consistently and effectively to oppose similar government policies that adversely affect other kinds of business.

Payment of Excessive Claims

THE discussion of freight claim payments on fresh fruits, melons and vegetables at the special meeting of the American Railway Association at Chicago on May 15, an account of which appears in this issue, aroused so much interest that it resulted in the adoption of a resolution urging that the executives of the various roads insist on adherence to rules and regulations prescribed last December by a joint committee of the Freight Claim division and the Operating division. This resolution rightfully placed the responsibility for the settlement of claims on the executives of the railroads participating in the handling of these commodities, for when executives insist that definite statements regarding the extent of the damage be noted on the exception report, the claims on this class of traffic will be reduced. The eastern or delivering carriers now place the blame for large payments on the originating lines by attributing claims to poor containers and improper loading and stowing. The originating lines, on the other hand, maintain that studies and surveys that

they have made show that excessive claims cannot be attributed to any particular type of container or method of loading and stowing, and contend that the large claims paid at certain eastern points are a result of laxity at the time of delivery. They support this contention by a survey of cantaloupe shipments, which shows that claims per car delivered at different stations varied from \$1.09 to \$23.89, and by the results of another survey on citrus fruits and lettuce which shows that the claims paid average \$14.49 per car at 28 eastern markets, in contrast with \$3.79 per car at all other points. It is also to be noted that whereas in 1929 the increase in claim payments on all commodities, as compared with 1928, amounted to \$875,723 for 180 carriers representing 95 per cent of the railroad mileage in the United States and 60 per cent of the Canadian mileage, 47.5 per cent of that increase was in payments by two eastern carriers alone.

Still Stronger Track

ONE of the interesting indications of the change that is taking place in the thought of railway officers and particularly of those in the maintenance of way department relative to standards of track construction is reflected by their approach to the problem of determining the proper weight of rail. It is not many years since any discussion of this problem was predicated on the relation of weight to safety, for the feeling was prevalent that the factor of safety between traffic and track had been reduced to the point of danger. Of late, however, following the widespread installation of heavier rail, this point of view has largely disappeared and, barring certain types of failures which appear to be largely independent of section, the question of rail weight is coming to be recognized as one of economics. In other words, maintenance of way officers are now approaching the subject with the desire of determining what section and weight will give the lowest cost, all maintenance and operating factors considered, an adequate margin of safety being taken for granted. This is a highly satisfactory development, for it not only signifies the disappearance, to all practical purposes, of one form of hazard to travel, but it also places the selection of rail on an efficiency basis.

This trend is reflected by the study of the various factors influencing the economical selection of rail which has recently been made by the Kansas City Southern, the report of which is abstracted on a following page. While this study necessitated the making of certain assumptions, the correctness of some of which may be open to question, it is a pioneering investigation in this direction which will serve to stimulate further study. The significant development in this study is the fact that on this road of moderate traffic the most economical weight of rail was found to be one heavier than is used on even roads of the most dense traffic. In other

words, even though the conclusions of the Kansas City Southern may be open to argument in some details, the spread between these conclusions and the standards of construction in general use are so great as to leave little opportunity for doubt regarding the real conclusion—namely, that the railroads are warranted in going to the use of rail sections and of track construction far heavier than those in common use, and that as this is done the cost of railway operation will be reduced.

In so far as this one study can be taken as a guide, it confirms the general policy of the railways in recent years in making increasingly liberal expenditures for better track and provides a strong incentive for its continuance. It also coincides with the experience of the electric utility industry that liberal expenditures on capital account afford large economies in operation.

Why Coal Traffic Is Small

A REPORT recently issued by the United States Bureau of Mines throws some light on prevailing trends in general business which are affecting railway traffic. This report shows that on April 1 the total amount of bituminous coal in the hands of commercial consumers was 33,100,000 tons. Excepting on July 1, 1929, this was the smallest amount of coal reported as in the hands of commercial consumers since November 1, 1922, when the production and transportation of coal had been reduced for months by both a coal strike and a nationwide strike of railway shop employees. It was 3,800,000 tons less than on April 1, 1929, 15,200,000 less than on April 1, 1928, 44,000,000 less than on April 1, 1927, when a coal strike was impending, and 7,000,000 less than on April 1, 1926. There is often a decline in stocks of coal on hand between January 1 and April 1, but it is a significant fact that stocks on hand at the beginning of this year were smaller than at the beginning of any year since 1923, and that nevertheless there has since been a steady decline.

In a period of depression consumption, and in consequence production and shipment, of coal always decline, but the facts given show the existence of an unusual condition. Coal tonnage is relatively a large part of the total tonnage handled by the railways, and, therefore, a large decline in shipments of coal produces very marked effects upon railway total and net earnings. In any entire year, however, consumers must be supplied with an adequate amount of coal, and when stocks on hand and shipments in the early part of a year are unusually small, it is reasonable to anticipate a relatively large increase in shipments in the latter part of the year. Conditions and developments affecting coal traffic in the early part of 1930 have been similar to those in the early part of 1924, and an unusually large increase in coal shipments in the latter part of 1924 was the principal cause of an unusually large increase in railway total and net earnings.

It is an interesting and important question whether the tendencies which are affecting the stocks of coal being carried are not also affecting the stocks of materials and goods of other kinds being carried by business concerns. The decline of total car loadings from the beginning of the year to and including the week ended May 10 was about 8 per cent, while the decline of coal loadings was 9.7 per cent. In the six weeks ended May 10 the decline of total loadings was 8 per cent and the decline of coal loadings 10½ per cent. The decline of coal loadings has been relatively larger than that of total loadings, but not enough larger to negative the thought that in other lines, as well as in the coal business, consumption may be exceeding production.

At any rate, the longer traffic is adversely affected by the excess of consumption over production of coal, the greater will be the effect on traffic when it becomes necessary to make production exceed consumption sufficiently to increase stocks of coal for the winter months.

Elisha Lee on Co-ordination

THE keynote of the modern trend in transportation was sounded by Elisha Lee, vice-president of the Pennsylvania at a round-table conference held in connection with the annual meeting of the Chamber of Commerce of the United States at Washington, D. C., on April 30. Speaking on "What's Ahead for Business in Railroad Transportation?" Mr. Lee pointed out what has taken place and what is likely to occur in the future with regard to "co-ordinated transport."

He defined "co-ordinated transport" as the "utilization of the various agencies of transportation in such manner that their respective advantages and points of superiority may be added to one another rather than set off against each other." He pointed out that co-ordinated transport is making great strides. Railroads are operating motor coach lines on schedules co-ordinated with their train operations; motor trucks are being brought into direct association with rail operations for the movement of l.c.l. freight along railway lines and in terminals. Railways are also working in connection with air transport lines, the most notable instance of this being the co-ordinated train and plane service between New York and Los Angeles established by the Pennsylvania and its associated company, the Transcontinental Air Transport, in co-operation with the Santa Fe. Joint service is also now being rendered by railroads and barge lines operating on various inland waterways.

The railroads, according to Mr. Lee, will continue to constitute the backbone of the transportation facilities of this country. Grouped around them as auxiliaries, operating in harmony and co-ordination with rail services, will be the other transportation media—motor vehicles, aircraft and waterways. In short, the railroads will continue to be the primary carriers, while other agencies of transport will be the secondary carriers.

Chicago & Eastern Illinois Junks Old Power Fast

*Scraps 42 locomotives
in 16 days*

*Gives stores and shops em-
ployment in slack period*



*Views of
the Wrecking
Work at
Danville*



IN the interest of modernization and also with a view to giving supply and shop forces employment during a slack period of business the Chicago & Eastern Illinois recently put 42 of its 340 locomotives on the chopping block and reduced them to scrap. The dismantling was the largest work of the kind ever undertaken by the road and was done in the record time of 15½ working days, or at the rate of over three locomotives per day. Oxyacetylene was used and the

work was done under a piece work plan, which allowed a fixed payment for each engine, including the gas, which was charged to the crews at cost.

The equipment consisted of Atlantic and Consolidation type road locomotives, and six-wheel switching locomotives which were built about 27 years ago and which had become worn out or fallen into disuse because of insufficient tractive power. Of six classes of power involved, three classes, comprising 21 engines, were eliminated from service by the operation and will make it unnecessary for the stores to carry repair parts in stock or to maintain patterns at factories.

The equipment weighed about 3,820 net tons. This included wood cabs, pilots, tank beams, boiler lagging, arch brick, etc., having practically no sale or salvage value, or about 4½ per cent of the weight. The locomotives had previously been stripped of air pumps, lubricators, injectors, headlights, brake valves and cab trimmings. Preparatory to wrecking, the locomotives were examined by the shop and store forces to determine what material was salvageable and how the non-salvageable material could be prepared to get the best prices in the scrap market. Advance bids were received for the estimated tonnage of different classes of scrap, and, from the results of past experiences, the work was planned to secure the greatest economy and speed of operation. This was accomplished by using five parallel tracks in the shop area at Danville, Ill. The locomotives were arranged on the two outer tracks, leaving the center track open for operating locomotive cranes and the other two tracks for loading cars with the scrap and salvaged material. Beyond the five tracks was unoccupied land which was used for burning woodwork.

Consistent with previous practice and principally



Method of Loading the Scrap for Sale

because of its experience with scrap handling and marketing, the dismantling was carried out under the immediate direction of the store department. Work was begun on 11 engines of the smaller type, which were placed on the first track, these engines were immediately inspected by shop and store supervisors, and all parts such as couplers, pockets, tires, brake beams, rods, etc., which could be used as serviceable material, were marked.

The original crews consisted of 23 cutters, 6 laborers, 6 supervisors and 2 locomotive cranes. The cutters were divided into 10 gangs of 2 men each and 1 gang of 3 men. These gangs were assigned to do all work, including the torch work, required in the dismantling operation and in preparing for market all material not being returned to the shops, and they were given a supply service which made it unnecessary to leave the job.

Methods of Work

The first step was to remove the sand dome, stack, front end and all outside trimmings. The front flue sheet was cut close to the boiler shell, the firebox disconnected by torch and the flues lifted from the engine by a derrick. The boiler shell and firebox were dislodged from the frame without being cut up, and this was also true of the water cisterns of the engine tenders. All scrap driving tires were cut from the wheels and the frames were cut by torch into No. 1 melting steel scrap, while all other non-salvageable parts not calling for shop work were reduced on the ground to the appropriate A. R. A. classes, which numbered from 25 to 30. No effort was made to reduce the heavy cast into the No. 1 grade, owing to lack of facilities, but the differential between the prices offered for different classifications of scrap was considered in all other cutting work. As fast as the material was accumulated, the smaller scrap and usable material were sorted into buckets and the heavy parts were picked up and loaded into cars, in order to give the men as much room as possible.

Special care was used to recover all valuable scrap such as copper and brass which exceeded 1,700 lb. per locomotive. The driving wheels, engine and tank wheels and driving boxes were sent to the shops, wheels were pressed off the axles, the crank pins removed, the lead melted from the counterbalances, the usable parts returned to stock and the scrap loaded in cars and billed direct to buyers. The flues all went to the boiler shop where they were rattled and the salvaged flues set apart for reuse or for making fence posts, while the remainder was graded and sold to companies engaged in manufacturing posts. In the dismantled condition, the locomotives represented about 81½ per cent scrap and 13½ per cent salvage, by weight.

Piece Work Saves Gas

The piecework plan of doing the work resulted from studies made in previous dismantling, which disclosed that the cost of oxygen and acetylene was high in pro-



A Locomotive Boiler Ready for Market

portion to the labor cost and was subject to great variation, depending upon the care and judgment exercised by the cutters in using it. This was borne out in the dismantling of the 42 locomotives, where some of the cutters would use the torch in removing piping, small brackets, cylinder heads, nuts, etc., which could be done more quickly with a sledge and chisel bar.

It was felt that the only way in which to discourage waste of gas was to put the work on a piece basis by establishing a lump sum for the job, in which the gas would be charged to the men at cost. The cutters could thus increase their earnings by saving gas. This plan was put into effect with the understanding that adjustments would be made in prices if they were unreasonably low. The best men increased their earnings approximately 50 per cent, as a result of improving their methods.

Few Injuries in Work

During the entire work, including the loading of scrap and cleaning the premises, there were few personal injuries. One man was absent two days and two others had injuries dressed, and returned to the job. These results were attributed to the fact that the men were called together before the work and the hazards explained, and then watched during the progress of the work. L. J. Ahlering, general storekeeper, was in charge of the dismantling work.



Some of the Old Power Ready for Wrecking

Air Brake Association Elects Officers

THE Air Brake Association closed its thirty-seventh annual convention, which was held in the Hotel Stevens, Chicago, by electing W. H. Clegg, chief inspector of air brake and car heating equipment, Canadian National, as its president for the ensuing year. Other officers elected were: First vice-president, R. M. Long, supervisor of air brakes, Pittsburgh & Lake Erie; second vice-president, W. F. Peck, supervisor of air brakes, Baltimore & Ohio, and third vice-president, C. H. Rawlins, general air brake instructor, Denver & Rio Grande Western. T. L. Burton, air brake engineer, New York Central, and Otto Best, Nathan Manufacturing Company, were re-elected secretary and treasurer, respectively.

The following were elected members of the Executive Committee: E. Z. Mann, general mechanical instructor, Atlantic Coast Line; E. Von Bergen, general air brake, lubrication and car-heating engineer, Illinois Central; J. E. Gardiner, general air brake inspector, Boston & Maine; J. P. Stewart, general supervisor of air brakes, Missouri Pacific, and J. A. Burke, assistant supervisor of air brakes, Atchison, Topeka & Santa Fe.

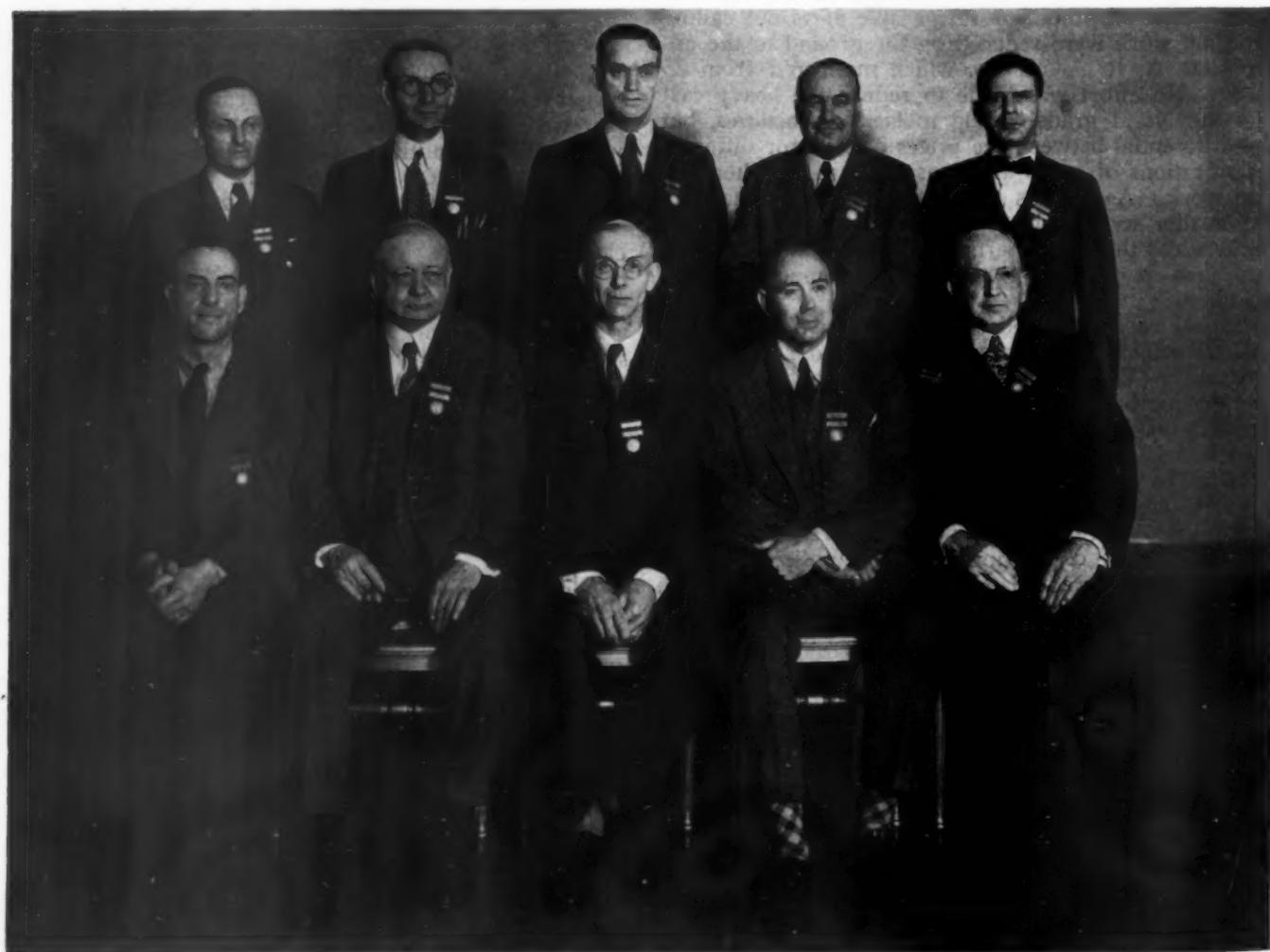
The official registration of members and guests attending the convention this year was 689. The Executive

Committee selected Toronto, Ont., for the convention in 1931 [reported in the May 17 issue of the *Railway Age*, page 1193].

New Officers for Air Brake Appliance Association

The Air Brake Appliance Association, which holds an exhibit in connection with the annual conventions of the Air Brake Association, held its annual meeting on Thursday afternoon, May 15, and elected the following officers: President, A. S. Lewis, Barco Manufacturing Company; first vice-president, H. A. Flynn, New York Air Brake Company, and second vice-president, E. H. Weaver, Westinghouse Air Brake Company. F. W. Venton, Crane Company, was re-elected secretary and treasurer. Thomas O'Leary, Jr., Johns-Manville Corporation; S. A. Witt, Detroit Lubricator Company; J. W. Fogg, MacLean-Fogg Lock Nut Company; J. A. Galligan, Superior Railway Equipment Company, and E. G. Busse, Chicago Railway Equipment Company, were elected to the Executive Committee of the Appliance Association.

DIRECT RAIL SERVICE between Paris (France) and Barcelona (Spain) will be established by the end of 1930, according to Department of Commerce reports. Agreements have been completed, but the new service cannot be put into effect until the Spanish section of the trans-Pyrenean line from Puigcerda to Barcelona is changed from its present wide gage to the standard 4-ft. 8½-in. gage. The Spanish government has appropriated approximately \$1,179,000 for this purpose.



Officers and Executive Committee of the Air Brake Association During 1929-1930

Front row, left to right: W. F. Peck (B. & O.), third vice-president; T. L. Burton (N. Y. C.), secretary; W. W. White (Mich. Cent.), president; W. H. Clegg (Can. Nat.), first vice-president; R. M. Long (P. & L. E.), second vice-president.—Back row, left to right: Executive Committee members E. Von Bergen (I. C.), J. A. Burke (A. T. & S. F.), C. H. Rawlins (D. & R. G. W.), J. P. Stewart (M. P.), and E. Z. Mann (A. C. L.).

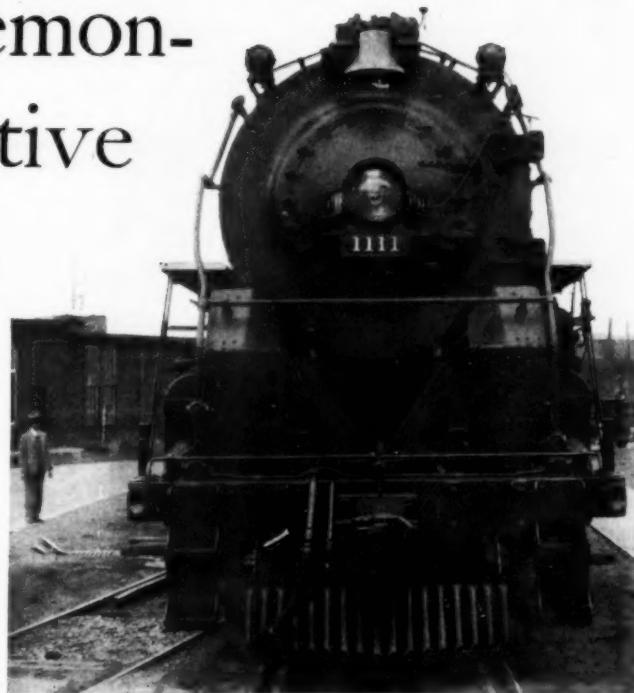
A 4-8-4 Type Demonstration Locomotive for Timken

Fifty-three specialty manufacturers co-operate in building locomotive with all axle journals equipped with roller bearings

THE American Locomotive Company recently delivered a 4-8-4 type locomotive to the Timken Roller Bearing Company, all of the axle journals of which are equipped with Timken roller bearings. This locomotive was built primarily for test in both freight and passenger service. It was first operated on the New York Central, Lines East, and is now in service on the Pennsylvania.

The locomotive is designed to operate at a boiler pressure of 250 lb., and that pressure will be used on all roads where the locomotive is operated which permit a weight on each pair of drivers of over 62,000 lb. The operating boiler pressure will be reduced to 235 lb. for operation on those roads having a limiting axle load of 62,000 lb. or less.

This duplex distribution of weight is partially accom-



Front View of the Timken Locomotive Built by the American Locomotive Company

plished by means of Townsend adjustable equalizer-fulcrum blocks for the equalizers between the drivers and the trailing truck. With a boiler pressure of 235 lb., the total engine weight of 417,500 lb. is distributed with 67,500 lb. on the engine truck, 246,000 lb. on the drivers, 48,500 lb. on the front trailing-truck wheels, and 55,500 lb. on the rear trailing-truck wheels. The tractive force at this pressure is 59,900 lb. which, together with the tractive force of 12,000 lb. for the booster, gives a maximum rated tractive force at starting of 71,900 lb. The factor of adhesion is 4.10.

When operating at a boiler pressure of 250 lb., the total engine weight is distributed with 264,000 lb. on the drivers, 58,500 lb. on the engine truck, and 40,000 lb. and 55,000 lb. on the front and rear axles of the trailing truck, respectively. The tractive force at this pressure is 63,700 lb., making a total maximum rated tractive force at starting of 76,500 lb., including the booster tractive force of 12,800 lb. The factor of adhesion is increased slightly to 4.14. The drawbar capacity is thus increased about 4,500 lb. on roads where the heavier axle loads are permitted.

The cylinders have a diameter of 27 in. and a stroke of 30 in. The diameter of the drivers is 73 in.

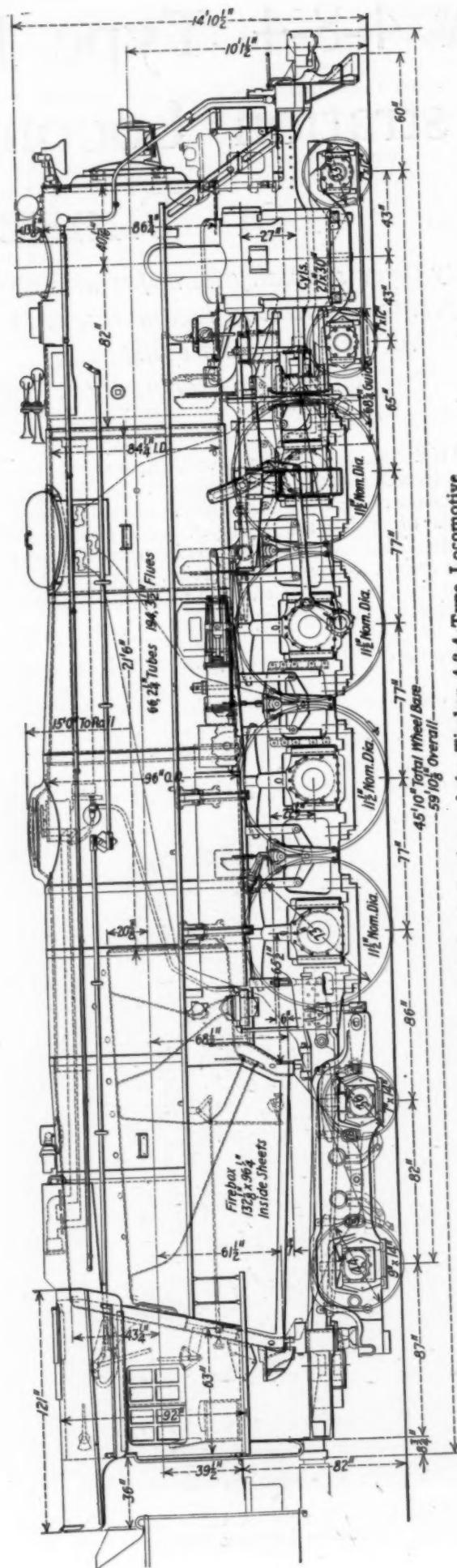
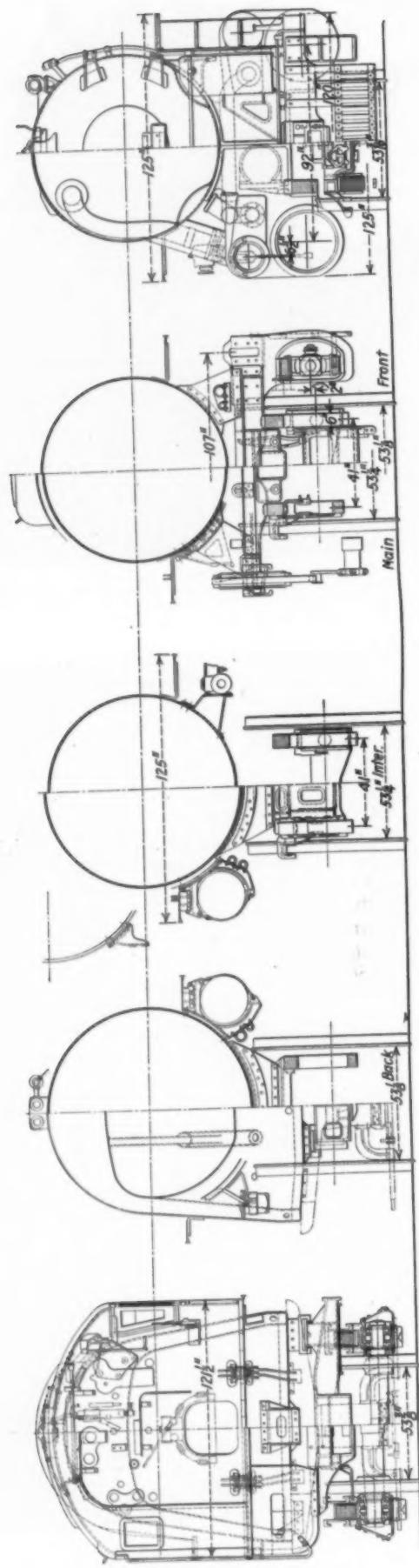
Fifty-Three Specialty Manufacturers Co-Operate with Timken

The building of the Timken roller-bearing locomotive is one of the interesting examples in the history of American industry of co-operative effort between manufacturers. After the Timken Company decided to build this locomotive the plan for the construction was submitted to various locomotive specialty manufacturers, and a total of 52 companies supplied their equipment on an open account basis, in which payment is deferred until the locomotive is sold at the completion of its demonstration period of approximately two years.

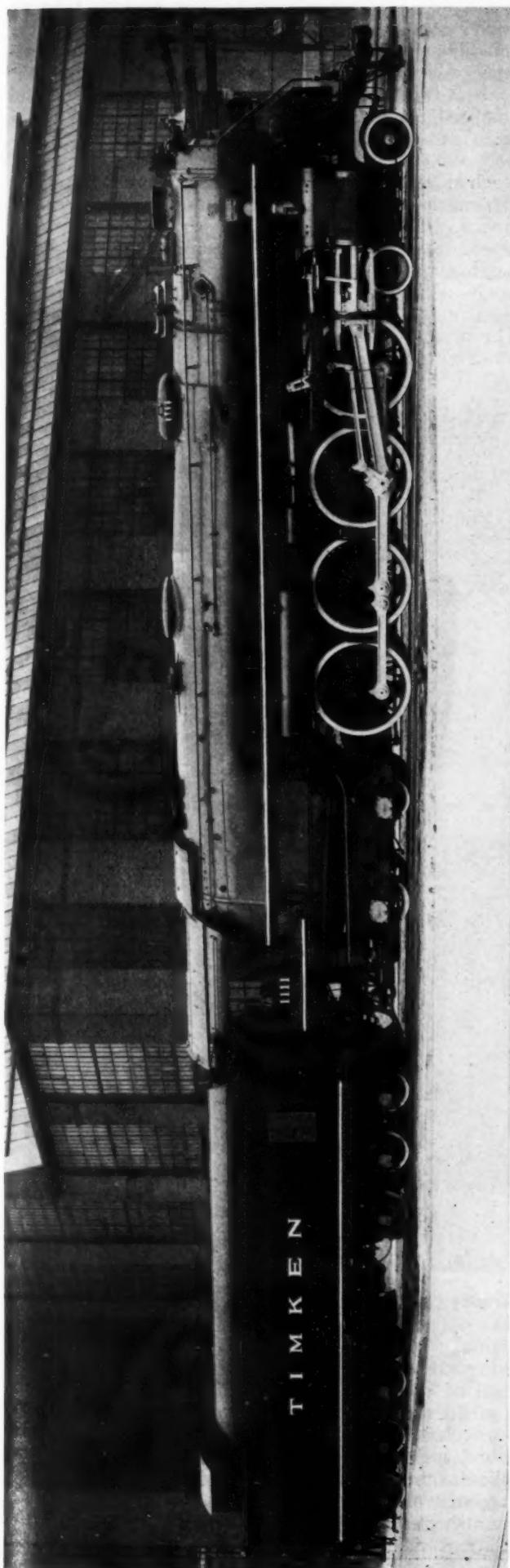
The list of manufacturers co-operating and the equipment which they supplied are shown on bronze



Rear View of the Tender—A Cabin Is Provided for Timken Representatives



Elevation and Cross Sections of the Timken 4-8-4 Type Locomotive



The 4-8-4 Type Locomotive Built by the American Locomotive Company for the Timken Roller Bearing Company

tablets secured on each side of the tender. A photograph of one of these plates is shown. Fifty-two manufacturers cooperated on the basis described in the preceding paragraph and one company co-operated

Table of the Principal Weights and Dimensions of the Timken Roller Bearing Company Locomotive

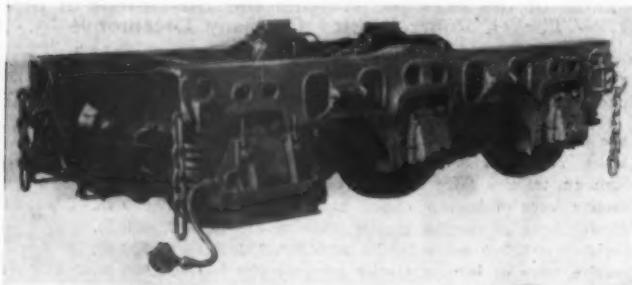
Owner	Timken Roller Bearing Company
Builder	American Locomotive Company
Type of locomotive	4-8-4
Service	Freight and passenger
Maximum tractive force (boiler pressure 235 lb.)	59,900 lb.
Tractive force of booster (boiler pressure 235 lb.)	12,000 lb.
Tractive force at starting (boiler pressure 235 lb.)	71,900 lb.
Maximum tractive force (boiler pressure 250 lb.)	63,700 lb.
Tractive force of booster (boiler pressure 250 lb.)	12,800 lb.
Tractive force at starting (boiler pressure 250 lb.)	76,500 lb.
Weight on drivers + tractive force (boiler pressure 235 lb.)	4.10
Weight on drivers + tractive force (boiler pressure 250 lb.)	4.14
Cylinders, diameter and stroke	27 in. by 30 in.
Valve gear, type	Walschaert
Weights in working order (boiler pressure 235 lb.):	
On drivers	246,000 lb.
On trailing truck, front	48,500 lb.
On trailing truck, rear	55,500 lb.
On front truck	67,500 lb.
Total engine	417,500 lb.
Weights in working order (boiler pressure 250 lb.):	
On drivers	264,000 lb.
On trailing truck, front	40,000 lb.
On trailing truck, rear	55,000 lb.
On front truck	58,500 lb.
Total engine	417,500 lb.
Total tender	294,000 lb.
Total engine and tender	711,500 lb.
Wheel bases:	
Driving	19 ft. 3 in.
Driving, rigid	12 ft. 10 in.
Total engine	45 ft. 10 in.
Total engine and tender	89 ft. 9 1/4 in.
Wheels, diameter outside tires:	
Driving	73 in.
Driving, rigid	36 in.
Trailing truck, front	44 in.
Trailing truck, rear	33 in.
Front truck	
Journals, nominal diameter and length:	
Driving, main	11 1/2 in.
Driving, others	11 1/2 in.
Trailing truck, front	7 in. by 14 in.
Trailing truck, rear	9 in. by 14 in.
Front truck	7 in. by 12 in.
Boiler:	
Type	Extended wagon top
Steam pressure (weight on drivers 246,000 lb.)	235 lb.
Steam pressure (weight on drivers 264,000 lb.)	250 lb.
Diameter, first ring, inside	84 1/4 in.
Tubes, number and diameter	66—2 1/4 in.
Flues, number and diameter	194—3 1/2 in.
Length over tube sheets	21 ft. 6 in.
Grate area	88.3 sq. ft.
Heating surfaces:	
Firebox and combustion chamber	360 sq. ft.
Arch tubes	18 sq. ft.
Thermic siphons	105 sq. ft.
Tubes and flues	4,637 sq. ft.
Total evaporative	5,120 sq. ft.
Superheating	2,157 sq. ft.
Combined evap. and superheating	7,277 sq. ft.
Tender:	
Water capacity	14,200 gal.
Fuel capacity	21 tons
Wheels, diameter outside tires	33 in.
Journals, nominal diameter and length	6 in. by 12 in.

by direct sale on favorable terms, making a total of fifty-three manufacturers which co-operated with the Timken Roller Bearing Company in the construction of the locomotive.

Why the Locomotive Was Built

The Timken locomotive was constructed with the definite objective of demonstrating to the railroads the feasibility of the application of roller bearings to all the axle journals of a steam locomotive. The decision to build a new locomotive rather than to reconstruct an existing engine owned or operated by some railroad was made to afford any railroad interested the opportunity to make tests without restriction. Furthermore, a locomotive in demonstration service is checked

against the operating performance of existing power, and this condition requires a locomotive of sufficient power and capacity to compare favorably with the best modern locomotive design. It was realized, however, that a locomotive of the type desired would be re-



One of the Tender Trucks

stricted on account of weight and clearance limitations which exist on a number of roads where tests would naturally be contemplated. As is well known, the weight allowance on the drivers for the railroads in this country varies within wide limits.

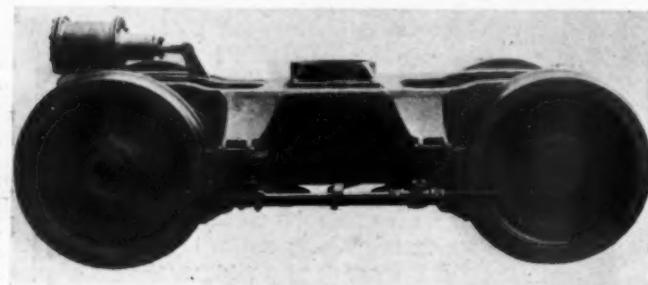
These conditions led to the adoption of the 4-8-4 type of wheel arrangement and to the provision for adjusting the weight on drivers.

The application of roller bearings on the axle journals, especially the drivers, removed the limitations relative to speeds at which the locomotive could be safely operated with respect to bearing conditions. It was apparent that, by careful attention to the detail design of the reciprocating parts, the selection of materials, the size of the drivers and the proportioning of the cylinders, a near approach to the ideal locomotive, having the conventional type of boiler, could be attained. This was the basic reason for the 73-in.

rily specified for locomotives of this general type at diameter speeds. The calculations indicated that this permissible speed could be obtained by the use of heat-treated one-piece pistons, heat-treated hollow piston rods, heat-treated nickel vanadium steel crossheads and normalized main and side rods of 2 3/4-per cent nickel steel. These features effected a reduction of approximately 460 lb. in the weight of the reciprocating parts on each side of the engine. Careful attention was given to counterbalancing and the main drivers are cross-balanced. The counterbalancing permits operation at a speed exceeding 85 m.p.h. without exceeding a dynamic augment of 10,000 lb.

The Driving-Wheel Bearings

The principal advantage of the roller bearing on the main driving-axle journals is that it permits a full 360-



The Engine Truck

deg. bearing as compared with the usual form of crown-brass bearing. The piston thrust is resisted by 180 deg. of bearing as compared with half this amount on a plain bearing. The possibility of the axle lifting out of the bearing is eliminated.

The designers of the bearings recognized that the



The Trailer Truck

drivers, 27-in. by 30-in. cylinders and the 250-lb. steam pressure, with the result that a locomotive was built with ample boiler capacity and within the weight and clearance limitations required for service on most railroads in the United States and Canada.

Maximum Speed of 85 Miles an Hour

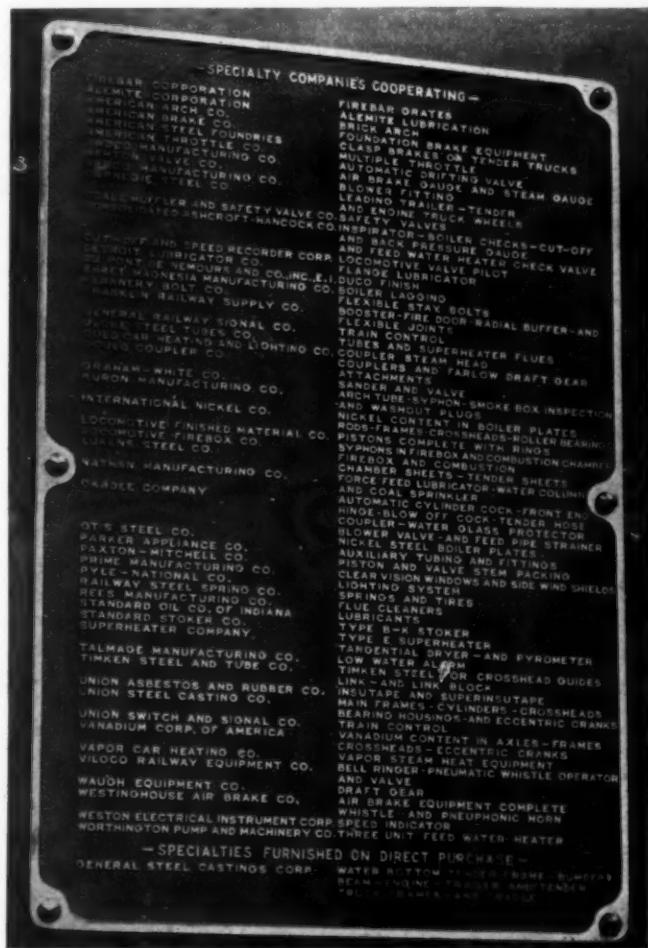
The speed specification submitted by the owners to the builders called for a maximum speed of 85 m.p.h., with a dynamic augment within the limitations ordina-

advantage of the full 360-deg. bearing on the main driving-axle journals would be attainable over a long period of operation only by maintaining correct spacing of the driving wheels and side rods. It was, therefore, considered undesirable to use an adjustable feature, such as shoes and wedges, on a roller bearing applied to the journals of a main driver. It was equally apparent that materials such as iron or brass, would have a short service life if made non-adjustable. These conditions resulted in the development of a complete

hardened-steel train of parts in connection with the mounting of the driver bearings in the frames.

The bearing housing of one piece extends across the frames and contains a roller bearing at each end. Hardened and ground liners are welded to these housings. The bearing housings are also provided with trunnions at the sides in the pedestals, having hardened steel bushings which engage with the trunnion guides. These guides are of hardened and ground steel which are in turn loosely mounted in hardened and ground steel pedestal liners attached to the frame.

The use of the trunnion guides provides for full surface contact between the pedestal and the housing, without the "hour-glass" effect generally used on the flanges of driving boxes. This construction is experimental in the design of journal bearings for locomotive



One of the Bronze Plates Secured to Side of the Tender

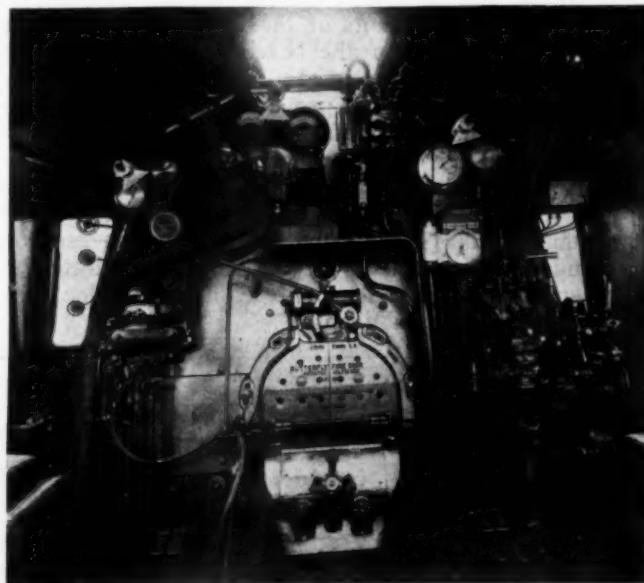
drivers, but previous experience with roller-bearing engine trucks having this feature, made of the standard grade of steel casting not hardened, indicates that the trunnion guides should give extended service. It is expected that these guides will not require attention between shopping periods of approximately 150,000 locomotive-miles.

The Engine-Truck Bearings

The engine truck is of the same general design as those used on the New York Central 4-6-4 type locomotives. This design provides an integral housing which extends across the truck having one bearing at each end which takes every combination of thrust and radial load. There are no thrust plates on the housing or corresponding thrust hubs on the wheels. This

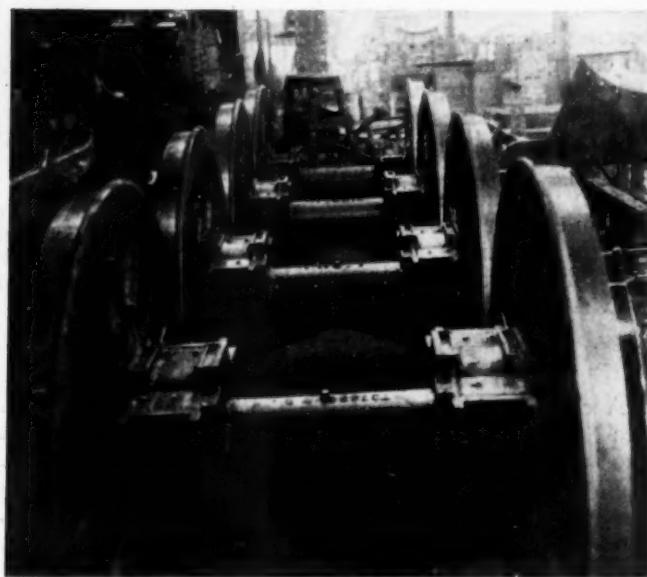
feature is also provided in the driving-wheel bearings.

The trunnion guide construction is utilized to provide full surface contact for the thrust and radial load between the bearing housing and the truck frame. Past experience indicates that the engine truck should be



Interior of the Cab

good for at least a year's service between lubricating periods. It is reported that engine trucks of similar design have required no attention for bearing defects or for lubrication during two years of service. The construction of the engine truck permits the utilization of the standard type of rolled-steel wheels having small



The Drivers Ready to be Applied to the Locomotive

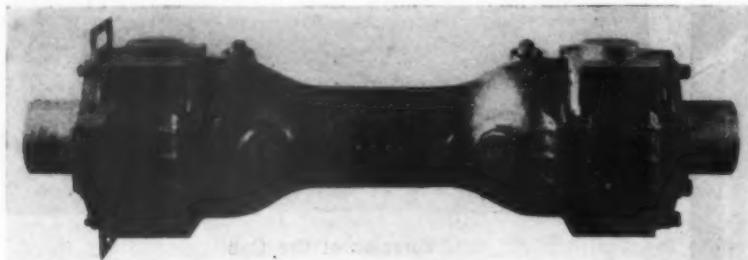
symmetrical hubs ordinarily used on tenders. This eliminates the necessity of carrying engine-truck wheels with large hubs.

The Trailing-Truck and Tender Bearings

The trailing truck journal bearings are of the regular Timken double-bearing outboard construction. They operate directly in the pedestal opening provided for plain bearings in trailer service. The rear trailer bearings are of the conventional roller-bearing type and

take the thrust reactions of the trailer truck. The front axle bearings do not take thrust reactions. They are provided with a self-centering lateral-motion device on rollers which allows $2\frac{3}{4}$ in. of lateral motion. This construction is of the same general type as that used on the lateral-motion engine trucks. The lateral is within the requirements of the I. C. C. rules, as the lateral motion between the bearing housing and the pedestal is not over $5/16$ in.

The Franklin booster is provided with Timken bearings on the crank-shaft and the idler gear. The crank-shaft bearings are of the regular double-bearing construction, a double bearing being mounted on each end of the shaft. The idler-gear bearing is of the Quad type construction of the same general type as used on the tender. The size of this bearing was selected to meet space limitations encountered on the idler gear and supporting mechanisms.



Engine Truck Axle Assembly Before Applying the Wheels and Trunnion Guides

The bearings on the tender journals are the new Timken Quad type, composed of four rows of medium size bearings mounted as a unit in the housing. This bearing operates in plain-bearing pedestals, no change being necessary in the construction of the truck frames, equalizers, springs, or brakes. It is interchangeable with plain bearings. It is reported that this type of mounting, which is relatively new in railroad service, has had over 200,000 miles in test service, over 100,000 miles test in regular service and has been successfully operated under heavy locomotive tenders in passenger service.

Special Equipment

A considerable reduction in the weight of the cross-head was obtained by the use of Timken steel, hardened and ground, on the crosshead guides. This selection of material was made due to the fact that the guides operate in an atmospheric dust which is composed largely of silica. The steel in the guides permits carburizing and hardening to a degree considerably harder than that of silica. This prevents cutting and scoring by sand and grit which may become imbedded in the tin babbitt lining on the crosshead. It is believed that the hardened guide will result in reduced wear on the crosshead shoes. The use of guides of hardened steel is part of the plan of the designers to reduce hammering and knocking to which the bearings on the driving journals will be subjected as wear on the guides increases. Timken steel is also used in the links and link blocks of the valve motion.

The locomotive is equipped with a Type E superheater, a Tangential steam drier, Standard BK type stoker, Worthington three-unit feedwater heater, Nich-

olson thermic syphons, and Firebar grates. The boiler and firebox plates are of 2-per-cent nickel steel.

For the lubrication of the locomotive there are over 1,300 Alemite fittings, of which 168 are on roller-bearing units.

The tender has a cast-steel water bottom tender frame. It is carried on two six-wheel trucks and has a capacity for 14,200 gal. of water and 21 tons of coal.

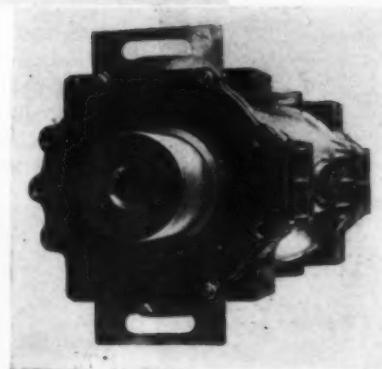
The locomotive is fitted with both Union Switch & Signal Company and General Railway Signal Company train control equipments. This is one of the measures taken to remove the limitations on its service on as many railroads as possible.

Economies Expected from the Timken Locomotive

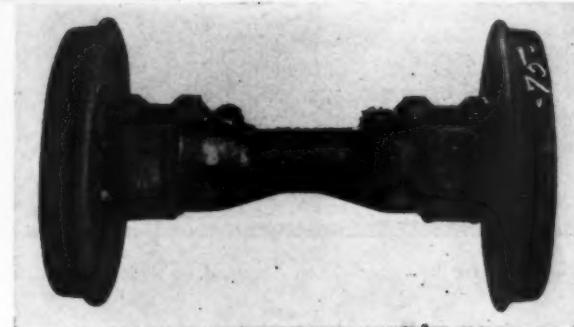
The operating economies expected from this locomotive are principally those believed to be possible from long continued operation with minimum repairs to the driver and other journal bearings. It is believed that the shopping periods will be limited in duration to conditions resulting from boiler operation. The roller friction when starting is about 5 per cent that of the plain bearing, which indicates that 95 per cent of the weight of the locomotive, or over 670,000 lb., can be added to the train without exceeding the permissible starting resistance of the locomotive and train. In addition, the weight on the drivers is subject to piston-thrust loads about four times that of the static weight.

These features, it is estimated, should permit a locomotive equipped with roller bearings to start a train of 900,000 lb. greater weight than a locomotive having plain bearings and equal tractive force.

It is calculated that the rolling friction of the main bear-



End View of Engine - Truck Axle Assembly



The Complete Assembly

ings under heavy load will be reduced approximately one-half. This is based on tests on similarly loaded steel-mill bearings. The reduction in rolling friction on the other journals, including the tender, will vary from 5 to 15 per cent, being least at a speed of about 30 m.p.h. and higher at low speeds and at high speeds. This is due to the fact that the speed-friction curve for a roller bearing is a straight line from zero to maximum speeds. The curve for a plain friction bearing reaches its minimum at about 30 m.p.h. and then gradually increases at high speed due to inadequate maintenance of the film of oil at the higher operating speeds.

What Is the Economic Weight of Rail?

Kansas City Southern makes exhaustive investigation to determine the relative values of different sections

As a part of a well defined program of research to determine the most economical practices in railway maintenance, the Kansas City Southern has recently completed an analysis, based upon original data obtained under actual operating conditions, of the economical section of rail. As a result of this study, which has covered a period of two years, the conclusion has been reached that this road is warranted in substituting a 137-lb. rail section for the 85-lb. section which has heretofore been the standard, while any increase in the present volume of traffic will justify the use of a still heavier section. The following is an abstract of an exhaustive report leading to the above conclusion.

In his "Economic Theory of Railway Location," published in 1889, Wellington says: "In buying rails we are not buying steel; at least we do not care to buy it. We are buying three imponderable qualities: (1) Stiffness, (2) strength, and (3) durability. If we get our money's worth of these qualities, it is a matter of complete indifference whether we get much or little of steel. If we do not get our money's worth of what we want, our bargain is just as bad, however much steel we get."

In this statement, Wellington pointed out clearly and concisely the fundamentals of the economics of rails. A railway is interested in the amount of steel in the rail only because it is an index of the cost. It is particularly interested, however, in the qualities he mentions because these are the indices of the ability of the rail to perform its functions in the track. The particular problem which confronted the Kansas City Southern at the outset of its investigation, then became the proper evaluation of these qualities and a comparison with the cost of the steel, because therein lies the economics of the selection of rail.

The Kansas City Southern adopted 85-lb. rail as its

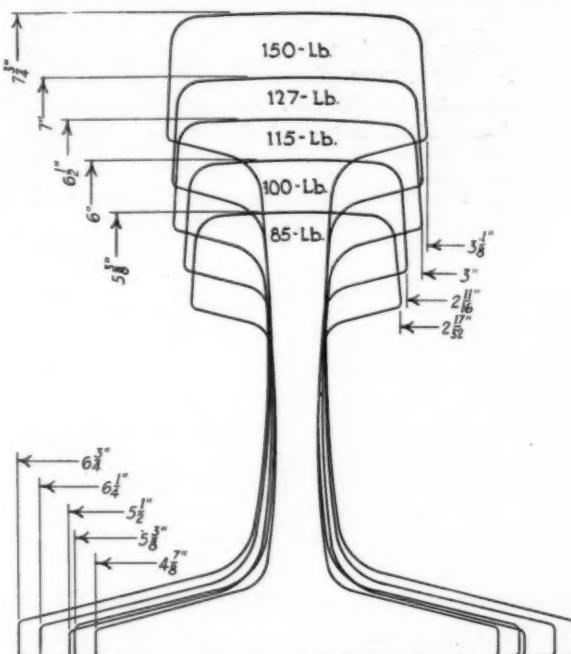


Fig. 1—Comparison of the Rail Sections Studied

standard in 1905, and continued to use this section until 1926 when it was supplanted by the A. R. E. A. 100-lb. section, a comparatively small amount of which was in use at the beginning of this investigation.

The procedure adopted was to secure actual experimental data on the 85-lb. and 100-lb. sections in use; and on the Dudley 115-lb. and 127-lb. sections, some of which were secured for experimental purposes; and in the light of this information also to analyze the A. R. E. A. 150-lb. section. Figure 1 shows a comparison of these sections and Table I gives their comparative phy-

Table I—Comparative Physical Properties of the Rail

Rail section	Weight per yard	Tons per mile	Moment of inertia	Comparative stiffness	Mean carbon content
85	85.0	133.6	34.0	100	0.70
100	101.5	159.5	49.0	144	0.75
115	114.4	179.8	64.0	188	0.75
127	127.3	200.0	83.7	246	0.81
150	150.5	236.5	121.1	356	0.85

sical properties. Particular attention is called to the relative stiffness of the several sections under conditions of ordinary fixed or free support. It is well to bear in mind, however, that rail in track is supported on an elastic foundation, and that stiffness of the entire track structure is different from, and should not be confused with, that of the rail alone.

Stresses Under Dynamic Loading

When the physical properties of the rail and its support are known, it is possible to calculate the stresses developed in the rail by any known static loading. Table II shows the stresses in the various sections calculated in accordance with the method developed by the Committee on Stresses in Track, which result from a standing K. C. S. Class H-1, Pacific type passenger locomotive, this being the locomotive in use which gives the maximum stress. The comparison in this table de-

Table II—Comparative Maximum Stress Under Static Loading Developed in the Different Rail Sections Under K.C.S. Class H-1 Pacific Type Passenger Locomotive

Rail section	Track factor (u)	Maximum bending moment in lb.	Section modulus, base	Maximum stress in lb. per sq. in.	Comparative maximum stress
85	1125	233,000	14.0	16,700	100
100	1225	237,000	17.8	13,300	80
115	1325	240,000	21.3	11,300	68
127	1400	237,000	27.0	8,800	53
150	1550	233,000	35.1	6,600	40

pends upon the correct determination of the track factor, u , and this was determined after a careful study of all information available on this subject.

For a moving load, applied by a locomotive in motion, the stresses shown in the table will be increased by impact and other agencies. If a known factor could be applied to these calculated static stresses to determine the dynamic stresses, it would be a relatively simple matter to calculate the maximum stresses developed in any rail section and then select a rail in which this maximum stress would be well within a safe limit. Unfortunately it is very difficult to determine the dynamic stress and particularly its maximum value. Speed, the unbalanced moving and rotating parts of the locomotive,

the effect of swaying and nosing, the steam effect and the condition of the wheels, these factors, either singly or in combination, produce unknown stresses, which may be increased or modified by the condition of the line and the surface of the track, while still another variable is introduced by the fact that the roadbed does not offer a uniform support to the track structure.

Factor of Safety

In the use of any engineering material it is necessary to employ a factor of safety. For justifiable reasons, the design of rail has developed in a manner somewhat different from that of most engineering structures, and the most reliable criterion of the satisfactory performance of rail has been the rate at which failures have occurred. This method has been made more difficult, however, by the continually increasing wheel loads of locomotives and cars, since every such increase lowers the factor of safety in the rail.

In order to arrive at a more concrete comparison of the factors of safety of the different rail sections, an impact factor of 100 per cent, which was not considered unreasonable, was applied arbitrarily to the static

Table III—Comparative Maximum Dynamic Stresses and Factors of Safety Under K.C.S. Class H-1 Pacific Type Passenger Locomotives With 100 Per Cent Impact Assumed

Rail section	Maximum static stress in lb. per sq. in.	Maximum dynamic stress in lb. per sq. in.	Factor of safety
85	16,700	33,400	1.5
100	13,300	26,600	1.9
115	11,300	22,600	2.2
127	8,800	17,600	2.8
150	6,600	13,200	3.8

stresses in Table II, to obtain the comparison shown in Table III. The factor of safety thus derived is the ratio between the endurance limit of the rail steel, taken as 50,000 lb. per sq. in., and the dynamic stress.

Since the stresses which are developed in rails are not known accurately and since absolute uniformity in the strength of the rail is not assured, it is desirable to provide as large a factor of safety as is possible, consistent with cost.

Life of Rail

The service life of rail is affected by many conditions and varies with traffic density, wheel loading, speed, track alignment, grades, character of maintenance and other factors. It was borne in mind throughout the entire study that it was of major importance, in fact, that it was fundamental, to obtain truly comparable values between the different rail sections under investigation. In order to do this it was essential that all physical characteristics tending to affect the life of the rail should be the same, so that for this purpose the life of the rail was considered as dependent upon the rate of rail batter.

This was believed to be a proper basis, since a relatively small amount of rail is removed from the track because of excessive wear. Owing to the heavy demand for a good quality of relayer rail, it is common practice to remove rail from heavy traffic lines and relay it in less important lines when batter or surface bending develops sufficiently to produce rough riding track, although the reduction in section from wear may be negligible.

Another reason for using batter as a basis of comparison is that the principal factors affecting the amount of rail batter are the hardness of the metal and the width of the running surface of the head, both of which are also the principal factors affecting the rate of wear. Again, rail batter evidently is a more conservative index of rail life than wear for purposes of comparison, as

reports from the other railways indicate that on curves, where wear is without question the determinant factor in rail life, the heavier sections have lasted several times as long as the lighter sections. While other conditions sometimes arise which necessitate the early removal of rail, these cases are infrequent and have a negligible effect on the problem as a whole, so that for ordinary conditions the rate of batter will determine the life of the rail.

Other conditions being equal, it was reasoned that the amount of tonnage passing over the rail, which will be required to produce a given amount of batter will vary directly as the width of surface exposed to the battering action of the wheels. Thus, increasing the width of the head will result in a longer service life for the rail. Likewise, within well defined limits, increasing the carbon content of the steel increases its hardness, thus raising the resistance of the rail to batter.

Effect of Rolling and Rate of Cooling

The heavier sections do not receive as much rolling or working in the rolls as the lighter sections, while they cool more slowly owing to their greater mass. It has been shown, and this is confirmed in practice, that the slower cooling produces a softer metal, although this can be controlled to a slight extent by varying the carbon content. In order to determine the effect of the rate of cooling on the resistance to batter, the most logical basis of comparison is the ratios of the areas of the heads to the perimeters of the various sections, and this is shown in Table IV.

Table IV—Effect of Slower Cooling and Less Rolling on the Rate of Batter of the Different Rail Sections

Rail section	Area of head (sq. in.)	Perimeter (in.)	Area perimeter ratio	Relative hardness	Relative rate of batter *
85	3.14	6.86	.458	100	100
10025	3.80	7.54	.504	91	110
10032	3.93	7.50	.523	88	114
115	4.30	8.05	.535	86	117
127	4.30	8.05	.535	86	117
130	4.63	8.36	.554	83	121
150	5.12	8.78	.583	79	127

* Due to the effect of slower cooling and less rolling only.

Sufficient laboratory data were available to provide a check on the relative hardness shown in column 5 of this table, and it is interesting to note that the relative hardness, as calculated, compared almost exactly with the values obtained from the laboratory tests.

Since the angle bars are not as stiff as the rails they join, it follows that there will be a break in the uniformity of the depression curve of the rail at the joint. They do transmit a part of the bending moment from one rail to the next, however, and it was calculated that they are 80 per cent effective in reducing the slope be-

Table V—Effect of Rail Stiffness Upon the Rate of Batter of the Different Rail Sections

Rail section	Relative depression (No moment transmitted by angle bars)	Relative distance from zero moment (ld. pt. to)	Relative slope of moment transmitted by angle bars	Relative slope and rail batter with 80 per cent of moment transmitted by angle bars
85	100	100	100	100
100	86	107	80	96
115	76	112	68	94
127	68	118	58	92
150	57	127	45	89

tween the surfaces of the abutting rail ends. Table V was prepared by first assuming that the angle bars transmit shear but no moment and then, for the last column, that the reduction in the rail batter will equal the reduction in the slope between adjacent rail surfaces.

Estimated Life of the Different Rail Sections

By combining the effects of width of head, carbon content, rate of cooling and stiffness, the relative life-

of each rail section was determined in terms of a percentage of that of the 85-lb. rail, this section being the only one that had been in service a sufficient time on this road to determine the tonnage it may carry during its service life. The investigation disclosed that 550 miles of the 85-lb. rail had carried an average of 65,000,000 gross tons at the time of its removal from the track.

Effect of Volume of Traffic

The actual cost of rail per unit of tonnage carried is the sum of the interest charge over the period of its life plus the accrued depreciation at the time of its removal.

Table VI—Estimated Life of the Different Rail Sections (both in millions of gross tons of traffic carried and in years of service after 1927, based on the traffic increase shown in Fig. 2)

Rail section	Width of head	Carbon content	Slower cooling	Relative batter in per cent, due to increase in rail stiffness	Life in millions		
					Combined effects	Relative life	gross tons in years
85	100	100	100	100	100.0	100	65.0 10.86
100	91	93	110	96	89.3	112	72.8 12.01
115	74	93	117	94	75.6	132	85.8 13.90
127	74	84	117	92	66.9	150	97.5 15.54
150	74	79	127	89	66.1	152	98.8 15.72

While the depreciation can be expressed conveniently in terms of the tonnage carried, it is necessary to know the life of the rail in years corresponding to its tonnage life

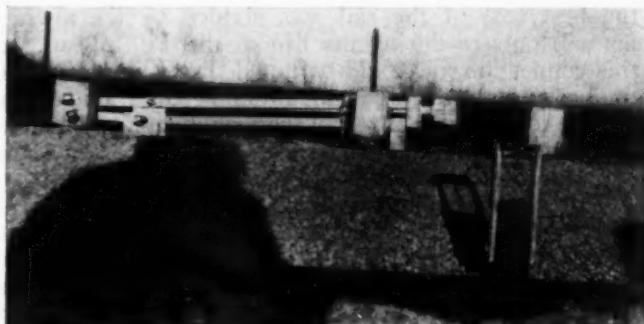


Fig. 3—Arrangement of Levers for Measuring Rail and Tie Movement

Y being the total cumulative traffic since 1905, expressed in millions of gross ton miles per mile and X again any year since 1905. By plotting this equation, Fig. 2, it was an easy matter to obtain the life of the several rail sections in years corresponding to the life in tonnage. With this information available, Table VI was prepared to show the relative life, based on the factors heretofore considered, the life in millions of gross tons and the life in years.

Only the 85-lb. and 100-lb. rail had been in service long enough to permit measuring the amount of batter and thus determine directly the rate of batter. Meas-

Table VII—Cost of Rail and Fastenings in Place Per Mile of Track

Rail section	First cost per mile in place	Interest on first cost at 5 per cent per annum		Salvage value of rail	Depreciation of rail in million G.T.M.	Life of rail in million G.T.M.	Depreciation of rail per million G.T.M.	Net cost per million G.T.M.	Increased cost per million G.T.M. over that of 85-lb. rail
		per annum	G.T.M.						
85	\$11,359	\$568	\$91	\$4,955	\$6,404	65.0	\$99	\$190	\$0
100	12,633	632	102	5,622	7,011	72.8	96	198	8
115	13,661	683	110	6,162	7,499	85.8	87	197	7
127	14,718	736	118	6,697	8,021	97.5	82	200	10
150	17,053	853	137	7,850	9,203	98.8	93	230	40

in order to express the interest in the same manner. An estimate of the life of rail then entails a prediction of the future volume of traffic over the expected life of the rail.

A study of the past traffic record on the Kansas City Southern disclosed that the average annual increase over a period of 25 years can be represented by a straight line which is defined by the equation $Y = 2.64 + 0.12(X - 1905)$, in which Y is the average gross tons per mile per year, expressed in millions, and X is any year subsequent to 1905.

From this equation a second equation was derived which gives the total accumulated tonnage from this year for any given year. In this equation, $Y = \frac{1}{2}(X - 1904) [5.28 + 0.12(X - 1905)]$

A—Life of 85 lb. rail = 10.86 years

B—Life of 100 lb. rail = 12.01 years

C—Life of 115 lb. rail = 13.90 years

D—Life of 127 lb. rail = 15.54 years

E—Life of 150 lb. rail = 15.72 years

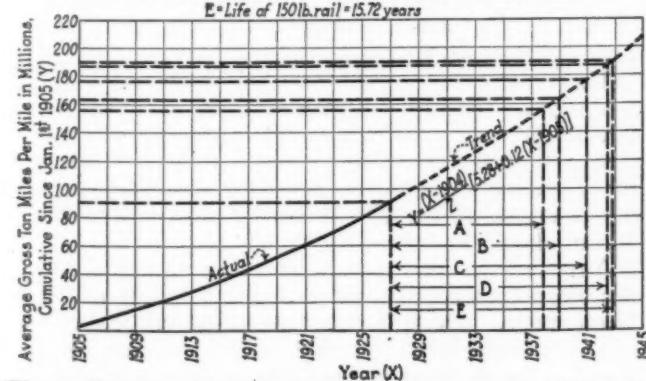


Fig. 2—Diagram Showing Cumulative Present and Probable Future Traffic and Life of Rail

urements on the 85-lb. rail laid in different years from 1906 to 1925 indicated that the average batter was 0.00038 in. per million gross ton miles per mile, and when this was compared with similar measurements on the 100-lb. rail, the results showed that the latter should carry 72.1 million gross tons, giving a close check on the 72.8 million gross tons in Table VI, which was determined in the manner already explained.

Recent developments in the process of building up battered joints may materially lengthen the service life of the rail. If it thus becomes economical to retain rail in service until wear necessitates its removal, the heavier rail sections will have a longer relative life than the light sections, since the same amount of total wear will not reduce the two areas in the same ratio. Having this in mind, a comparison was made between a well-worn 85-lb. rail and a 127-lb. rail having the same area of metal removed by wear. This comparison showed that the area of the heavier rail was reduced only 70 per cent as much as that of the lighter section, and that there still remained 47 per cent more metal than there was in the unworn 85-lb. rail. Likewise the stiffness and strength of the worn 127-lb. rail were, respectively, 136 and 75 per cent greater than the stiffness and strength of the 85-lb. rail when new.

Comparative Cost of the Different Rail Sections

Having determined the life of the different sections, the determination of the actual cost of the material in place per unit of traffic carried was a simple matter, as this cost is made up of only the interest charges and depreciation. In order to express the interest charges in terms of units of traffic, the annual interest charge on

the first cost of the rail was divided by the average annual tonnage during the life of the 150-lb. rail. In this connection, it should be noted that it is not correct to divide by the average annual tonnage of traffic during the life of any particular rail section which may be under consideration. Table VII shows the comparative cost per mile of the material only, computed on this basis.

The study disclosed no other objection to the use of heavier rail than that it costs more to install as compared with the lighter sections. Table VIII showed that this additional cost is surprisingly small, however, when expressed in units of its ability to resist wear, or its durability.

This quality and that of strength, or ability to resist fracture, having been discussed, there remained for study the relative effect of the stiffness of the various sections. It became apparent at once that it was through this quality that the principal economies in the use of heavy rail are obtained. Peculiarly enough, however, in a casual investigation, the benefits derived from the use of the larger sections seem to be almost completely intangible, but this is only because they are distributed

In arriving at the cost and economy of tie renewals with different rails, three causes of tie failure were considered: (1) Decay; (2) mechanical disintegration of the wood fibres under the rail; and (3) mechanical injuries as a result of spiking, checking, splitting and derailments. Since present methods of wood preservation prevent decay to such an extent that most ties fail from mechanical causes, the question of decay was ignored, as was mechanical injury from sources other than wear.

The study confirmed previous observations that the wood fibres beneath the tieplate do not disappear by being compressed into those below, but are worn away so as to be removed entirely from the tie. It was evident, then, that the motion between the tie and the tie plate is the destroying agency. In order to determine more exactly how this motion affected the erosion of the wood fibres, a series of motion pictures were made on track laid with 85-lb. and 127-lb. rail. By an arrangement of scales and levers, shown in Fig. 3, which multiplied the magnitude of the movements, the vertical movements of the rail and ties and the creepage of the

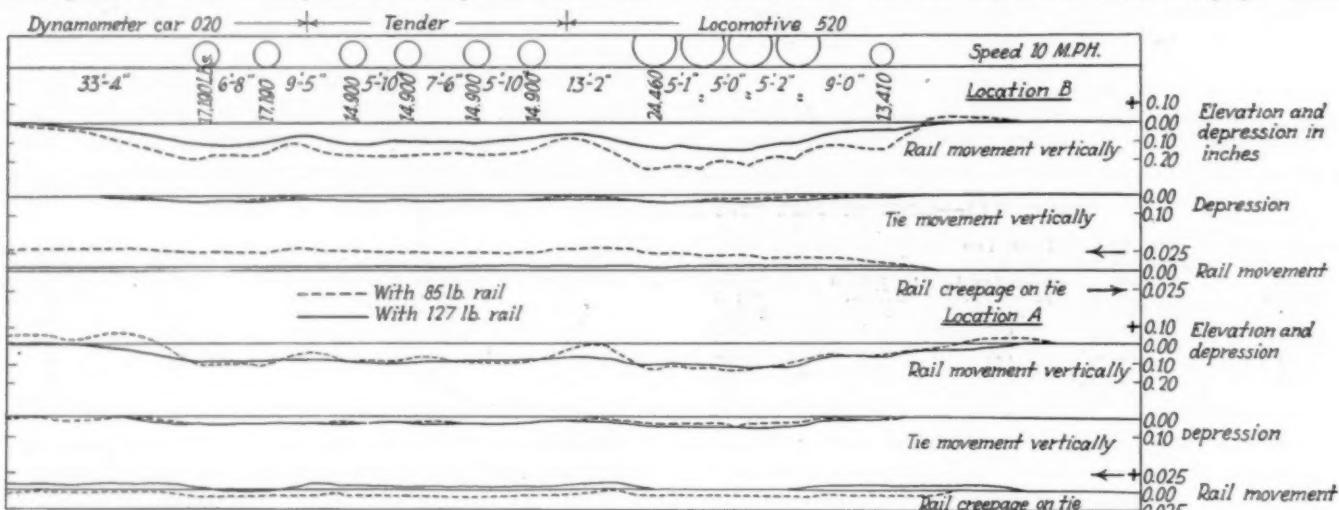


Fig. 4—Vertical Movements of Rail and Ties and Rail Creepage Plotted from Actual Measurements

among a large number of different items of operating expense and, in most instances, can be traced to their source only with considerable difficulty.

Economies in Track Maintenance

In evaluating the comparative maintenance requirements of the various rail sections, the cost per equated track mile for 85-lb. rail was calculated from the 1927 annual report of the Kansas City Southern to the Interstate Commerce Commission, and expressed in units of tonnage similar to the cost of the rail. On the same basis, the costs were calculated for the remaining rail

rail under a moving train were measured. Figure 4 was then prepared by plotting the scale readings as ordinates and the distances from the respective wheels as abscissas, to permit a close study of the action of the rail and ties as each wheel passed. From this data it was found that there was only 64 per cent as much compression of the tie under the 127-lb. rail as under the 85-lb. rail. Under both rails, there was a tight fit between the rail, the tie plate and the tie, when the track was not loaded, so that there was no question but that the tie plates were compressed into the tie by the amounts shown on the chart. So far as could be discerned, the tie plates returned to their original position with the removal of the load.

These pictures also showed that there was a definite creepage of the rail for both sections, and that, except directly preceding and under the locomotive, this movement was in the direction of the movement of the train. By reference to the chart, it will be seen, however, that the creepage of the 127-lb. rail is only 44 per cent of that of the 85-lb. rail.

Any tie wear must result from work being done, and this work consists of a force acting through a distance. The distance, which in this case is the vertical or horizontal movement of the rail, will be directly proportional to the tie reaction, and the rate of wear under the different rail sections may be expected to vary in pro-

Table VIII—Economies in Track Maintenance Per Mile of Main Track

Rail section	Track rating (per cent)	Labor per mile per year (man-hours)	Comparative maintenance labor (per cent)	Cost of labor per mile per million G.T.M.	Saving per mile per million G.T.M.
85	34	3150	100	\$120	\$0
100	50	1950	62	74	46
115	62	1470	47	56	64
127	67	1280	41	49	71
150	80	950	30	36	84

sections, but at the same time the track was rated in accordance with the improved track make-up which results from the use of the heavier sections. The savings per mile expressed in traffic units, are shown in Table VIII.

portion to the product of the rail depression and tie reaction, and on this basis Table IX was prepared.

Table IX Economies in Cost of Tie Renewals Per Mile of Main Track

Rail section	Maximum tie reaction		Maximum rail depression		Product of relative reaction and depression	Cost of renewals per million G.T.M.	Saving over cost with 85-lb. rail
	Relative, Pounds	in per cent	Relative, Inches	in per cent			
85	3330	100	.148	100	100	\$63	\$0
100	3256	98	.133	90	88	59	4
115	3230	97	.120	81	79	55	8
127	3136	94	.111	75	71	53	10
150	3130	94	.101	68	64	50	13

The rail depression and tie reaction were calculated in accordance with the method developed by the Committee on Stresses in Track, the value of u being the same as shown in Table II. It is interesting to note that the ratio of rail depression of the 127-lb. rail to that of the 85-lb. rail, as obtained in the motion picture tests, is 0.76, which is exactly the same as the value derived by the formulas used in the compilation of Table X, this indicating that the relative values of u which were used were correct.

Effect of Rail on Equipment

It was believed that the benefits accruing from the use of heavy rail are not confined to track maintenance alone, and for this reason, the effect on the cost of main-



Fig. 5—The Test Train Ready to Start a Test Run

taining equipment was studied. The extent to which the rail is instrumental in reducing these costs depends almost, if not entirely, upon the stiffness of the track rather than directly upon the stiffness of the rail itself. On this assumption Table X was compiled to show the relative economies for this item.

Table X—Economies in the Maintenance of Equipment Per Mile of Main Track

Rail section	Comparative damage to equipment from track	Cost of repairs due to track, per million G.T.M. of traffic		Savings per mile per million G.T.M.
		100	\$136	
85	100	122	14	\$0
100	90	110	26	14
115	81	102	34	26
127	75	92	44	34
150	68			

Savings in maintenance of equipment which accrue as a result of better track conditions affect repairs to steam locomotives, and freight, passenger and work cars. Thirty-two per cent of the total costs are constant and 78 per cent are affected by use. The effect of use is made up of damage from track conditions, damage from train movements and wear resulting from the production or application of energy in transportation. The assumption was made that each of the causes affects the cost of repairs equally, so that $\frac{1}{3}$ of 78, or 26 per cent, will be affected by improved track conditions, and this is the proportion of the 1927 costs on the Kansas City Southern which was used in calculating the table.

Since one of the important factors to be considered in a study of this character is the effect of heavier rail on train resistance, an attempt was made to measure the

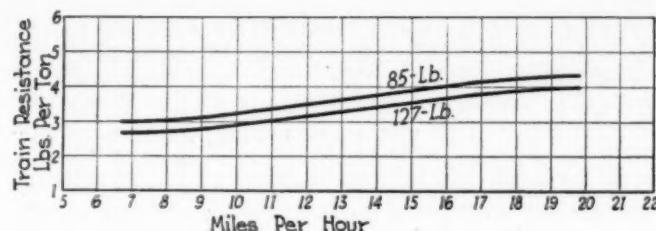


Fig. 6—Train Resistance Curves

exact amount of the saving from this cause. The first attempts to do this demonstrated that many variable factors intruded, such as wind and weather, the varying rolling resistance of different trains, the cant of the rail, the character of the roadbed, the alinement, the amount of rail wear, the amount of wheel wear and the journal temperature. A method of making the tests was accordingly devised, whereby these variables were eliminated and the results obtained were the true measurements of the difference in train resistance between the rails listed.

This method consisted in making one series of tests over three test sections of old 85-lb. rail, new 127-lb. rail and new 85-lb. rail, respectively, in the order named, which were laid adjacent to each other in main line tangent track. After this series was completed, the old 85-lb. rail was allowed to remain in place to serve as a check of one series with the other, but the locations of the new 85-lb. rail and 127-lb. rail were reversed, and a second series of tests were made.

The test train consisted of four loaded coal cars, a dynamometer car and the engine and tender. The test track, which was 6,000 ft. long, was on a 0.3 per cent grade. The procedure followed was first to run the train until a thermometer placed in the journal box of the dynamometer car showed a satisfactory temperature. The test train was then taken to the top of the grade and the air was "bled off" of the cars. The engine then started the train moving at the desired speed and cut off before reaching test section No. 1, running well in advance of the train until it had cleared this section. The train was then backed up and started over test section No. 2 at the same speed as over Section No. 1. The same procedure followed for section No. 3. No brakes were used at any time during these tests, the engine having been coupled to the train after each test by synchronizing its speed with that of the train.

The same loaded cars, Fig. 5, were used throughout

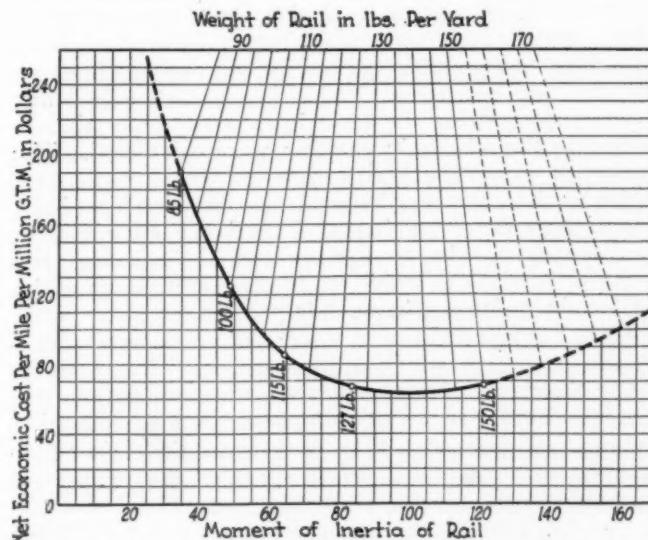


Fig. 7—Diagram Showing Net Economic Cost of Various Rail Sections

both series of tests, and by reversing the locations of the new rail, both sections were tested on the same roadbed, thus eliminating this variable. The runs were made in rotation at speeds of approximately 5, 10, 15 and 20 miles an hour. This method of making the tests of the different sections at the same time compensated for the effects of wind and weather and the relative effect of these factors on the two series of tests were determined by a comparison of the results on section No. 3 where the track was unchanged throughout the tests.

Measuring the Train Resistance

The method of measuring the train resistance was simple but accurate. The principle of the method was to allow the train to coast over the test section and measure its change of speed. The difference between the change in speed which should have occurred if there had been no resistance and the actual change which did occur, gave the resistance loss from which the train resistance could be computed. To do this it was necessary to take three measurements: The speed when entering the section, the speed at the moment of leaving the section and the difference of elevation between the ends of the section.

Three fixed electric contacts, 75 ft. apart, were established at each end of each section. As the train entered the section, contacts were made with a device on the dynamometer car which gave an indication on a

Fig. 6. By reference to this chart it will be noted that the 127-lb. rail shows 0.3 lb. less resistance per ton than the 85-lb. rail at all speeds between 7 and 19 miles per hour, these being the average maximum and minimum speeds of the various test runs. By a process of elimi-

Table XI—Economies in Train Operation Per Mile of Main Track

Rail section	Re- duction in resistance lb. per ton	Total re- sistance on a 0.5 grade	Train Miles per Mile		Total cost per train mile affected	Net saving per mile per million G.T.M.
			Required to handle tonnage (1927)	Total reduc- tion per G.T.M.		
85	0.0	14.00	2793	0	0	\$1.77
100	0.15	13.85	2762	31	4.5	1.77
115	0.26	13.74	2740	53	7.7	1.77
127	0.34	13.66	2724	69	10.0	1.77
150	0.40	13.60	2712	81	11.7	1.77

nation, it was concluded that the decrease in train resistance of the 127-lb. section resulted only from the lessened effect of wave action.

Theories have been advanced and proofs offered that the wave action of the rail has no effect upon train resistance. On this point Wellington says: "Although the springing up action of the rail behind the wheel is equal in intensity to the force necessary to depress the rail ahead of the wheel, the effect of the time element is such as to make the springing up action valueless."

The depression curves made in connection with the

Table XII—Summary Net Economic Value of the Different Rail Sections Per Track Mile

Rail section	Saving in track labor	Saving in tie renewals	Saving in maintenance of equipment	Saving in train operation	Total of savings	Cost of rail in place	Net economic cost	Net savings	Per Million	Gross Ton	Miles of Traffic
									Cost of rail in place	Net economic cost	Net savings
85	\$0	\$0	\$0	\$0	\$0	\$190	\$190	\$0			
100	46	4	14	8	72	198	126	64			
115	64	8	26	14	112	197	85	105			
127	71	10	34	18	133	200	67	123			
150	84	13	44	21	162	230	68	122			

strip of recording paper in the car, which was driven by a motor at a speed of about one inch a second. During this time and throughout the remainder of the run, a high precision chronometer with an electrical attachment gave an indication on the paper at intervals of one second. The speed at the leaving end was obtained in the same manner, and the difference in these speeds gave the change in speed over the section.

Having determined the difference in elevation of the positions of the individual cars at the entering and leaving ends of any section, it was a simple matter to calculate the total amount of work done on the train by the force of gravity. This work was absorbed in two ways: (1) In increasing the train speed and (2) in overcoming train resistance. Next the amounts of work done in accelerating the train in translation and in accelerating the wheels in rotation were calculated. The amount of work absorbed in overcoming train resistance then was the difference between the total work and the sum of these latter two items. This figure, expressed in foot pounds, divided by the product of the actual tons in the train and the length of the test section, gave the total train resistance in pounds per ton.

These two series of tests were made with new wheels on the coal cars which were used in the test train. These wheels were then replaced with worn wheels and a supplementary series of tests were made to determine whether worn wheels add to or decrease the train resistance. The results of this test indicated that there is a marked increase in this resistance on new rail as compared with old rail, but that there is no difference after the rail has become worn to fit the worn wheel contour.

The results of these tests are shown graphically in

train resistance tests, Fig. 4, were studied further and compared with the theoretical rail depression curves obtained from the A. R. E. A. formulas already mentioned. Two facts were at once apparent: There is a definite lag of the rail behind the wheel in returning to its normal position and a reluctance toward assuming depression. If, then, the reasoning and the data upon which it was based, which had led to the conclusion, were correct, that the resistance offered to train movement by the track results solely from the wave action of the rail, and the springing up action of the rail is to be neglected, the difference between the work required to depress the 127-lb. rail and that required to depress the 85-lb. rail, should equal 0.3 lb. per ton.

Calculating the "wave action" resistance of the 85-lb. rail when the train was moving at a speed of 10 miles an hour, it was found to be 0.99 lb. per ton. Likewise the resistance of the 127-lb. rail was 0.67 lb. per ton, a reduction of 0.32 lb. per ton, which compares with the actual difference of 0.3 lb. per ton obtained in the tests. These calculations were extended to speeds up to 50 miles an hour with no variation in the results. Pictures at the latter speed showed that the rail returns to its normal position between the front and rear trucks of the car the same as at the lower speeds.

It is apparent that a decrease in train resistance effects a larger reduction in the cost of train operation than a corresponding decrease in the ruling grade, since heavier trains can be handled with the same tractive effort, not only on the ruling grade but also on all other grades as well. By installing heavier rail, a greater tonnage per train is possible and fewer trains will be required. In order to determine the savings possible with

different rail sections, Table XI was prepared for the purposes of comparison. In making the calculations for this table it was assumed that the ratio of average tonnage per train to total tonnage rating remains constant.

In the preceding tables the costs of the different rail sections and the economies to be derived from their use, as calculated or obtained from field data, have been given individually. These various factors having been determined separately, it then became necessary to combine them in order to obtain the net economic value of each of the rail sections which were under consideration. Table XII summarizes these independent items, and shows the net economic cost of each section and the savings, as compared with 85-lb. rail, which may be expected from its use.

The first cost of the rail is the cost of the steel. The net economic costs shown in Table XII, are the costs of the properties of stiffness, strength and durability, for which the steel is bought. For this reason, that rail

should be used for which the cost of these properties is the least; if this is not done the track structure cannot demonstrate its highest efficiency. In order better to visualize the comparative economic values of the different sections they were plotted as shown in Fig. 7. From this diagram it at once became clear that the most economical rail for the Kansas City Southern to use should have a moment of inertia of 100, which, under current practices in rail design, corresponds to a rail weighing 137-lb. per yd. Attention is called to the fact, however, that this selection holds good only for the present traffic intensity and axle loading and that any increase in either will justify the use of a heavier rail section.

The entire investigation was carried out under the direction of A. N. Reece, chief engineer, G. M. Magee, of the engineering staff of the road, was in direct charge and he was assisted from time to time by other members of the engineering staff and by the mechanical and transportation department forces.

Wisdom of Recapture Provision Questioned by I.C.C.

*Alternative plan suggested in letter to Senate
committee on Howell rate base bill*

WASHINGTON, D. C.

WHETHER or not it is wise, all things considered, to retain in the present law the plan of recapturing railway excess earnings is a debatable question which merits serious consideration, says the Interstate Commerce Commission in a letter to the Senate committee on interstate commerce in response to its request for an expression of opinion on the Howell bill, S. 4005, which proposes to establish a statutory "rate base" to be used instead of a valuation in the regulation of rates.

As the law now stands, the commission says, the general railroad contingent fund is likely to be of very little use and it takes occasion to warn Congress of the danger that the litigation ensuing from the efforts of the carriers to resist recapture may result in the establishment of principles of valuation which may unfavorably affect the regulation of rates.

Without undertaking to pass at this time upon the question of the wisdom of recapture, the commission says that "undoubtedly the present recapture provisions are open to serious objections" and "are plainly in need of amendment," but that there is grave doubt whether the new plan proposed in the Howell bill for the handling and disposition of recapture funds understood to have been drafted by Donald R. Richberg and Senator Howell, is sound and practicable. Because of this doubt it suggests an alternative plan, intended to liberalize the provisions in important respects, such as by basing the recapture on a three-year average, and by providing that recapture shall not reduce a carriers return below 6.5 per cent.

The Howell bill proposes a gradual development of government ownership in the railways by providing that one-half of the excess earnings shall be held in

trust for the United States and expended with the approval of the commission in providing additions and betterments, while the other half would be held in trust for the investors and used, after the accumulation of a reserve, for the purpose of liquidating fixed obligations. For the present the commission suggests no modification in the provision of the bill which specifies how the rate base of each carrier shall be ascertained. This is approved in general as conforming in principle to the method outlined by the commission in its letter of January 20 relating to a resolution introduced by Senator Howell. The commission then suggested that Congress authorize a rate base arrived at by substantially the methods adopted by the commission in the O'Fallon case, so as to "simplify the task of bringing valuations down to date by reducing it practically to an accounting process."

The letter on S. 4005 was addressed on May 17 to Chairman Couzens of the Senate committee by Commissioner Eastman as chairman of the commission's legislative committee in behalf of the commission. He said, however, that Commissioner Farrell was not in harmony with some of the views expressed and attached a separate statement by Commissioner Woodlock who objected to the bill as designed to deprive the railroads of the enhancement in value of a large part of their properties since 1914 by a legislative overruling of the Constitution.

The matter of recapture merits a good deal of discussion, the letter says, pointing out that the general railroad contingent fund now amounts to more than \$10,000,000 but it is not yet available for the purposes contemplated by the statute, because the bulk of the payments have been made under formal protests and

reservations, and "it is not in the nature of positive and direct financial relief to needy short and weak lines" because "at best the opportunity thus afforded is only an opportunity to incur debt at 6 per cent interest."

In commenting on the Howell plan of dealing with excess earnings the commission's letter says in part:

The Howell Plan

It should be noted that under this plan the prosperous roads which have excess income would retain all of it, although they would be restricted in the uses to which it could be put. Even the half which is to be held as trustee for the United States would be invested in additions to or betterments of the carrier's own property and would be managed and operated by the carrier, and the latter would have and keep all income derived therefrom, subject only to the recapture provisions. It is in effect a plan whereby these prosperous carriers would be given the use of certain government funds for the purpose of extending or improving their property and upon the payment of 4 per cent interest, with the limitation that the particular extensions or improvements upon which the funds are spent must be approved by the Commission, and upon the condition that the investment in this property shall not enter into the rate base of the carrier, except to the extent necessary to cover the payment of the 4 per cent interest.

Interest a Burden on the Public

Before discussing possible objections to this plan, there are two respects at least, in our judgment, in which it can be improved if it is to be adopted. In the first place, we doubt the wisdom of requiring the payment of 4 per cent interest upon the certificates held by the Commission. The recaptured funds, which the certificates would represent, come from the pockets of the users of the railroads. The 4 per cent interest would likewise come from their pockets. In final analysis we regard the 4 per cent interest, in short, as a burden upon the public rather than upon the carriers.

In the second place, we doubt the wisdom of requiring the carrier to use the remainder of the investors' half of the excess income, after establishing the reserve fund, for the purpose of liquidating fixed obligations. The effect of such liquidation would only be of indirect benefit to the public. The amount which the railroad users must pay by way of return upon property investment would, as the bill is drawn, be determined by the rate base of the carrier rather than by the amount of its fixed obligations or of its entire capitalization. If fixed obligations, therefore, were retired in the manner proposed, no public burden would be reduced or diminished, because such relief would not affect the rate base. The result might, it is true, be an improvement in carrier credit which would be of indirect public benefit for the advantages of a low ratio of debt to capital stock and the disadvantages of a high ratio are obvious and have often been stressed by the Commission. But on the other hand it is conceivable that in some instances greater immediate improvement in carrier credit might result if the money in question were used in some other way, as for the payment of increased dividends. Upon the whole we are of opinion that this is a matter chiefly of wisdom in management which may more appropriately be left to the discretion of the carriers' directors, as under the present law.

Poorer Roads Would Gain No Benefits

But even if such amendments were made, is the plan which is proposed in S. 4005 for the treatment of recaptured funds wise and desirable? The constitutionality of the present recapture provision of section 15a was considered by the Supreme Court in *Dayton-Goose Creek Ry. v. U. S.* 263 U. S. 456, and was there sustained. It will be noted that the court stressed the fact that the amounts recaptured were to be used as a "fund for helping the weaker roads more effectively to discharge their public duties." It cannot be inferred from this with any certainty that the court would not have sustained the constitutionality of the recapture provision if it had contained no such feature; but certainly it was a feature which impressed the court and may have influenced its decision. It is wholly absent in the proposed new plan. The poorer roads would gain no benefit whatever from the funds recaptured from the more prosperous roads.

This is, we think, the most fundamental objection to the new plan. And it is an objection which has ramifications. The prosperous roads with excess income would receive funds at low cost (not more than 4 per cent pre annum) for extensions and improvements of their properties. But no such funds would be available for the use of the poorer roads.

It would seem, therefore, that a result of the plan might be a gradual widening of the gulf between the stronger and the weaker carriers.

A further objection would be that in the case of some carriers there might be no occasion for the investment of the recaptured funds in extensions and improvements. Under the new plan, as proposed, the recaptured funds could only be used to provide extensions and improvements of the properties of the carriers from which they were recaptured. There might be much greater need for the expenditure of the funds on the properties of weaker carriers without excess income, but they would not be available for this purpose.

Alternative Plan

An outline of the main features of the commission's alternative plan, of which a complete draft was attached to the letter follows:

A. Instead of making each year a period for recapture, it substitutes consecutive 3-year periods and the average earnings for such periods. This is a change along lines which the carriers, more particularly the short-line carriers, have been urging for a long time, and for the reasons already indicated we believe it to be a fair change.

B. The recapture is so arranged that the carrier's earnings will in no event be drawn down below 6.5 per cent upon the rate base, although the excess over 6 per cent which is retained will be subject, as now, to the provision with respect to the accumulation of a reserve fund for the payment of dividends, interest, or rentals. This is a more doubtful change, but we think that it is desirable, all things considered, to leave this margin.

C. The provision with respect to the reserve fund is substantially the same as that in the present law.

D. This new recapture plan is to date from January 1, 1930, but the carriers are given the right to elect to have it applied to past years prior to that date. In the event that they do not so elect, the existing law stands as to those past years, but the Commission is empowered to reach agreements with the carriers as to the amounts recapturable in the past. This is in line with the recommendation made in our letter to you of January 20, for the reasons therein stated. It is definitely provided, however, that "no such agreement shall thereafter be used in any proceeding before the Commission or in a court of the United States as evidence of the value of the property used for said carrier or systems."

E. In the case of loans made to carriers from the general railroad contingent fund, our alternative eliminates the provision in the present law requiring adequate security, and it authorizes the Commission to provide for interest payments varying with the amount of the carrier's net railway operating income, which in no case shall be at a higher rate than 6 per cent and under certain income conditions may be at a lower rate. Such a provision might be of great help to weak and struggling carriers. We would still be required to find that there is reasonable prospect that the carrier will be able to pay the interest and repay the loan, and authorized to fix terms and conditions, including security.

F. The present law authorizes the Commission to use the general railroad contingent fund to purchase "equipment or facilities," and to lease such property to carriers at a rental of 6 per cent per annum. Our alternative would authorize the Commission to provide for a rental varying with the net railway operating income of the carriers, as in the case of the interest payments on loans.

G. While the same uses for the general railroad contingent fund are specified as in the present law, with the modifications above indicated, our alternative contains a further general provision that the half of the excess income which the carrier holds as trustee for, and pays to, the United States shall be thus held and paid "for such uses and purposes as are herein specified or may hereafter be declared by law." This provision will remove any doubt as to the power of Congress to provide new uses for the fund, if that should hereafter be desirable.

H. Our alternative incorporates subdivisions (16), (17), and (18) of the existing section 15a, except that subdivision (18) is confined in its operation to a corporation organized to construct and operate a railroad, and does not apply to a carrier already operating a railroad and now subject to the Act.

Difficulties and Dangers in Recapture Plan

In connection with any recapture of excess earnings, whether under the present law or under any amendment thereof, we think that Congress ought to be informed that there are certain difficulties and dangers which offer some considerable menace to the public interest. Recapture is an undertaking which

involves great labor and expense, both to the carriers and to the government, but more important is the fact that it invites, far more than does the regulation of rates, litigation upon the part of the carriers. This invitation is accentuated by the fact that owing to litigation which has already occurred, the process of recapture has been greatly delayed, so that recovery would in a considerable number of cases involve the earnings of several years and the payment of very substantial amounts which it would tax the credit of the carriers to provide. It must be borne in mind that such excess earnings of the past do not now exist, in many instances, in the form of cash in the carrier's treasury, but have been invested in whole or in part in carrier property. Payment of recapturable funds would, therefore, involve to a considerable extent the issue of securities for the purpose of reimbursing carrier treasures.

Under such circumstances, it may be taken as certain that the carriers will resist recapture to the extent of their ability, and that much litigation will ensue. Under all the attendant circumstances the result may be the establishment in these cases of certain principles of valuation and the like which may have an unfavorable reaction on many broader phases of public regulation, such as the regulation of rates. Whether or not it is wise, all things considered, to retain in the law the plan of recapturing excess earnings is, therefore, a debatable question which merits serious consideration. It should be understood that in this communication upon S. 4005 we are not undertaking to pass upon that question.

The commission also objects to a provision in the Howell bill which would enable a carrier to seek a special revision of rates if it believed that the standard rate base method of regulating rates afforded it less than its constitutional right. Referring to subdivision (7) of the proposed amendment to section 15a the commission says:

Apparently the purpose of this provision is to prevent the carriers, either jointly or severally, from seeking in court to enjoin rates prescribed under the amended section 15a, until each carrier which claims an infringement of constitutional rights has sought specific relief from the Commission, indicating in its petition precisely what income it claims as a matter of right, how this is computed, and what rates it seeks as a means of relief.

In considering this provision, it is well to have in mind the situation of an individual carrier with respect to rates and charges. Many of the rates from which an individual carrier derives its revenue cannot be raised with advantage unless other carriers raise their rates also.

Commission Confident of Plan's Constitutionality

In this connection, also, there should be a clear understanding of the attitude of the Commission with respect to the establishment of the rate base such as was proposed in our letter to you of January 20 and as is proposed in S. 4005. It is our conviction that the establishment of such a rate base will in the long run be of advantage both to the railroads and to the railroad users, that it will stabilize and simplify the administration of section 15a, and that it will encourage rather than discourage the investment of private capital in the railroads. This being our conviction, we are unable to believe that any constitutional right of the carriers will be infringed, or that the Supreme Court will so find, once it understands clearly what is proposed and the advantages which the plan offers to both the carriers and the public. Nor do we think it probable that if the plan is put into operation, the carriers will resort to the courts to restrain our regulation of rates thereunder. If litigation results, it is much more likely to have its source in the recapture of income than in the regulation of rates.

We doubt the need, therefore, for subdivision (8), and we have this more positive objection to it. It conveys the impression, or so it seems to us, that the constitutionality of the proposed rate base is likely to be challenged, and that some tactical advantage in the determination of that issue is desirable and will be gained if individual carriers are required, before they resort to the courts, to pursue an application to the Commission for specific relief. The tactical advantage would result because of the difficulty which an individual carrier would experience, owing to the way in which the freight rate structure is interlocked and affected by competitive influences, in specifying the particular rates which would afford the relief which it seeks.

This impression which we gain from subdivision (8) may be without foundation, and it is quite possible that a better understanding of what it is intended to accomplish would remove our objections to it. It is sufficient here to say, how-

ever, that we are not persuaded that there is need for this provision; that we believe in the constitutionality of the rate base plan which is proposed; and that we are quite willing, if need be, that this issue of constitutionality be put to the test in the courts in any way which will secure thorough and impartial consideration of that issue.

Commissioner Farrell Disagrees in Part

Commissioner Farrell is not in harmony with some of the views expressed in this communication. He believes that the Commission should not be authorized to agree with carriers, informally, concerning the sums of money to be paid by them under the recapture clause; first, for the reason that, in his opinion, individual members of the Commission should not be deprived of the protection which results from public hearings, especially where, as here, the time at their disposal does not enable them to protect themselves by making careful examinations of the data upon which such agreements must be based, and, second, because he thinks that the position members of the Commission would occupy in informal proceedings would be somewhat inconsistent with the position that should be occupied by a tribunal which is continually deciding controversies between common carriers on the one hand and members of the shipping and traveling public on the other. For like reasons he is opposed to the view that the Commission should be authorized to exercise discretion concerning the rate of interest to be paid on loans to be made by the Commission to common carriers.

Woodlock Calls Bill Unconstitutional

Commissioner Woodlock's comment is in part as follows:

The object of the bill is to deprive the railroads of the enhancement in the value of a large part of their properties since 1914. This is proposed to be accomplished by the use of approximate original cost instead of present value as a rate base. That this is the purpose of the bill is clear by its failure to make any compensation in the rate of return or the rate of recapture, notwithstanding the reduction in the rate base.

Prescinding altogether from questions of equity and justice, I must point out that the bill attempts the impossible, namely, the overruling by legislative action of the Constitution, as interpreted by the Supreme Court. A long series of decisions by that court covering a period of more than thirty years have made it clear, beyond possibility of question, that when property is taken it can be taken only by due process of law, and that value of property so taken and compensation for its taking are facts to be determined by a judicial and not by a legislative process.

Every argument that has been urged in support of the present bill has at one time or another been presented to the Supreme Court. That court has expressed definite judgment upon them. It did this in the *Southwestern Bell Telephone case*. It did it in the *Bluefield case* and it did it recently in the *O'Fallon case*. The statute itself, under which this Commission acted in valuing the O'Fallon Railway for the purpose of recapture, did no more than enjoin upon the Commission that it should "give due consideration to all the elements of value recognized by the law of the land"—that is, the constitutional law of due process—and it was because the Commission did not follow this injunction that the court annulled the Commission's order. Nothing new can be said upon the subject.

Apart from this fundamental flaw the bill is defective in many other respects, of which I shall note but three, each of which is serious. In providing for the application of the 1910-14 unit prices to all inventories *as of their valuation dates under section 19(a)*, the bill would penalize carriers whose valuation dates are subsequent to 1914 and do so in proportion to the length of time elapsed between 1914 and valuation date. A carrier, for example, whose valuation date is 1914 would get the advantage of the enhanced prices reflected in its additions to property subsequent to that date, whereas a carrier whose valuation date is 1919 would lose the advantage of such enhanced prices between 1914 and 1919. A contrary discrimination would occur in the case of land values. A carrier whose valuation date was 1914 would receive 1914 values for its lands, whereas a carrier valued in 1919 would have its lands valued upon a much higher basis. The provision relating to the use of excess earnings is highly objectionable in that it would result in making the United States a part owner in the railroads—this by legislative fiat and without expenditure of one penny of public money. We can not have a hybrid system of part-Governmental, part-private railroads for reasons which need no recital here. The provision

referring to the collection of interest on recapturable excess income for past periods is clearly unsound in the light of the Supreme Court's decision in the *O'Fallon case*.

We have heard much of the "unworkability" of the "law of the land" in this matter. I am unable to see any great difficulty in applying the law, as the court has declared it. The Commission has in its possession data for that purpose which are fully as reliable as the data upon which it has made its primary valuations, and these primary valuations the present bill would make permanent. No greater difficulty exists in the application of present-day data than existed in applying the data supporting these valuations—as a matter of fact, the difficulty now is probably much less than it was then by reason of the experience gained in sixteen years of work. I am driven to the supposition that the "unworkability" of the law of the land arises less from the difficulties inherent in its application than from an indisposition to apply it and accept the results.

Pennsylvania-Wabash Clayton Act Hearing

WASHINGTON, D. C.

HEARINGS on the Interstate Commerce Commission's complaint against the Pennsylvania charging violation of the Clayton act in the purchase by the Pennsylvania Company, a subsidiary holding company, of stock of the Wabash and Lehigh Valley were begun on May 21 before Commissioner Meyer and C. V. Burnside, assistant director of the commission's Bureau of Finance. The complaint was issued about a year ago but hearings have been postponed while the commission's Bureau of Inquiry has been collecting evidence regarding the relations between the companies, much of which has been worked up into exhibits by officers of the roads involved at its request and was filed during the hearing.

L. F. Loree, president of the Delaware & Hudson, appeared as the first witness, under subpoena, and testified regarding an agreement between himself, Gen. W. W. Atterbury, president of the Pennsylvania, and Otto H. Kahn, of Kuhn, Loeb & Co., dated February 15, 1927, for the purchase by the two railroads of stock in the Wabash and Lehigh Valley in the interest of the Delaware & Hudson. That part of the agreement contemplating delivery of the stock to the D. & H. was later abrogated, he said, and instead the D. & H. sold its Wabash and Lehigh Valley stock to the Pennsylvania for \$62,500,000, more than the market value at the time but less than the \$85,000,000 which the D. & H. asked at the beginning of negotiations. Mr. Loree told of earlier conferences with the late Samuel Rea, president of the Pennsylvania, after they had learned that the "four-system" plan for the grouping of the eastern roads was afoot, at which it was decided that some action was necessary on their part as three other eastern systems seemed to be working against the Pennsylvania. When Commissioner Meyer asked why Mr. Loree thought it his duty to go to the aid of the Pennsylvania, Mr. Loree replied that he had not done so, but had "welcomed their aid." He told of returning from a trip to Europe and hearing that the executives of other roads had been discussing with the Interstate Commerce Commission the disposition of the road of which he was the responsible head, and after he had gained all the information he could on the subject he had started buying Lehigh Valley stock with the idea of obtaining control. After the arrangement with Gen. Atterbury purchases of the stock of both companies was

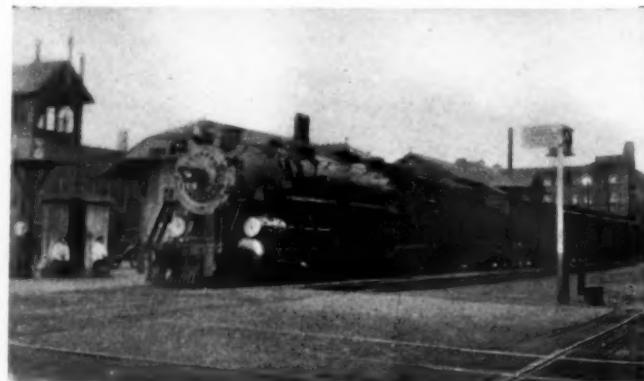
continued until it seemed wise to stop because the buying was increasing the market price.

At the opening of the hearing W. H. Bonneville, director of the Bureau of Finance, put into the record as exhibits a stipulation entered into by the Pennsylvania as to the holdings of the Pennsylvania Company, and various memoranda and extracts from evidence before the commission in other cases regarding the relations between the Pennsylvania and the Pennsylvania Company. A. C. McIntyre, assistant freight traffic manager of the Lehigh Valley, then put into the record a number of exhibits prepared at the request of the Bureau of Inquiry to show the extent of the competition between the Pennsylvania and the Lehigh Valley. One analysis of some 73,000 waybills showed 31,000 covering freight which could have been handled part way at least by the Pennsylvania. H. W. Bikle, general attorney of the Pennsylvania, objected to this exhibit on the ground that it included as competitive traffic that which could only have been handled by the Pennsylvania at a higher rate, as well as for other reasons, but Commissioner Meyer said the objection went rather to the weight to be accorded the exhibit. A number of other Lehigh Valley traffic men testified regarding competitive solicitation of traffic.

Mr. Bonneville then called W. C. Maxwell, traffic vice-president of the Wabash, as a witness under subpoena and had him identify a number of exhibits which he emphasized had been prepared by the Wabash at the "demand" of the Bureau of Inquiry. These included photostat copies of the proxy given by the Pennsylvania for the voting of its stock at the annual meetings of the Wabash in 1930, a record of dividend payments by the Wabash, and copies of the minutes of the Wabash annual meetings for the past five years. Mr. Maxwell said that he and President Taussig of the Wabash had conferred with Thomas P. Healy, former director of the Bureau of Inquiry, at Washington and at St. Louis and that representatives of the bureau had made many trips to St. Louis regarding the data which the bureau demanded should be prepared. As part of this he introduced a study he had made of the Wabash traffic to show the extent of its competition with the Pennsylvania.

THE COMMONWEALTH DIVISION of the General Steel Castings Corporation, Granite City, Ill., has begun work on the integral casting of 25 locomotive beds, each of which will weigh 82 tons and will be 60 ft. 1 in. long. They will be sent to the American Locomotive Company's plant at Schenectady, N. Y., where three-cylinder locomotives will be built for the Union Pacific.

* * *



A New York, Chicago & St. Louis Train
at Fort Wayne, Ind.



Sleet Storms Test Pole Strength

Developments in the Creosoted Pole Industry*

By R. E. Meyers

In Charge, Department of Chemistry and Tests, International Creosoting and Construction Company, Galveston, Tex.

RECENT years have seen a marked expansion in the use of creosoted pine poles over the entire country. Among the various species they have moved steadily upward, until now more creosoted pine is used annually than any other kind of pole timber. A restatement of the 1928 United States Department of Agriculture statistical tabulation is given in Table I. Certain factors pertaining to this trend in

Comparative Strength Properties of Woods Grown in the United States. This publication gives comparative figures which are index numbers to the relative strength of the various kinds of wood. The technical values have been combined into simplified comparative figures, subject to ready interpretation and application. The

Table II—Comparative Strength of Different Species of Timber

Species of Wood	Index Number Indicating Relative Strength of the Species
Longleaf Pine	106
Shortleaf Pine	97
Loblolly Pine	93
Chestnut	68
Western Red Cedar	60
Northern White Cedar	50

strength relationships of species commonly used for poles, quoted from Technical Bulletin No. 130, are shown in Table II. Taking the southern yellow pine group as 100, northern white cedar is 50.7 per cent, western red cedar is 60.8 per cent and chestnut is 68.8 per cent, as strong as southern yellow pine. While the foregoing figures are based on tests of small clear pieces and, therefore, are not directly applicable to poles, the figures do represent the best authoritative published index to the relative strength of the pole woods.

The American Engineering Standards Committee has

Table I—Number of Poles of Different Types Used Annually

Kinds of Wood	Full-length pressure treatment	Butt treatment only	Total
Southern Pine	1,528,441	1,528,441
Cedar			
Western Red	536	1,254,613	1,255,149
Northern White	555,921	555,921
Port Orford	225	8,658	8,883
Chestnut	100	284,624	284,724
Douglas Fir	17,375	417	17,792
Lodgepole Pine	3,000	410	3,410
All Other	565	565

the utilities industry, particularly with regard to developments of the past two years, are outlined in this article.

Comparative Strength Figures of American Woods

In February, 1930, the United States Department of Agriculture issued Technical Bulletin No. 158 on the

* Abstract of a paper presented at Dallas, Tex., before a meeting of the Southwestern Division of the National Electric Light Association.

been conducting an intensive study of actual pole tests and will later release figures giving modulus of rupture data, as determined by these tests. These figures are not now available, but when published, should be recognized as standard for fiber strength of the pole woods. In line construction, practical advantage is taken of the great permanent strength of creosoted pine in one of two ways—either by using smaller poles, or by using longer spans than when building lines with woods of other kinds.

Empty Cell Treatment Now Almost Universal

As to developments in treating processes, one of the largest users of poles, the Bell System, changed last year from a 12-lb. full cell to an 8-lb. Rueping empty-cell treatment, the treatment that for several years has been used by many companies for transmission and distribution lines, and for poles used in railway signal and telegraph installations. In this latter process, the poles come from the treating cylinders with the wood cells partly empty, whereas the former process left them full of creosote. The result is a better protected pole because of a deeper penetration of the creosote, a more even distribution of the preservative per pole, and a drier, cleaner pole.

From the standpoint of the creosoted-pole manufacturer, it has the further advantage that the treating industry, by reason of the purchaser's demands, instead of having two treatments, is able now to present a solid front, in that for pole treatment, 8 lb. of creosote treated by the Rueping empty-cell process is used in the vast majority of cases. Where pole lines go through swamp-lands, or are to be installed under climatic conditions similar to those of the tropics, consideration should be given to the use of a greater quantity of creosote per cubic foot of wood.

Termites Now Found in All But Three States

We wish to call attention to the increasingly serious depredations of termites or white ants. A recent government report announces that termites have now been found in all states of the Union, excepting North Dakota, South Dakota and Vermont. It seems that with the thinning out of the forest areas, which are the natural habitat of the termite, they have sought other shelter, and as a result dwellings and untreated pole lines are attacked. Termites work rapidly and dangerously; often there is no outside indication of their presence. In some severe cases, as at Beaumont, Tex. for example, untreated poles collapsed in three years from this cause.

Not only are the lines damaged, but the poles act as direct highways by which an infestation can spread from one section to another. Government tests have established that the creosoting of wood protects it from termite attacks for at least 20 yr. A N. E. L. A. report states that "So far as is known, termites have not attacked a creosoted pole by eating their way through creosote."

Industry Has Modern Merchandising Set-Up

One of the greatest changes of the last several years has been in the merchandising set-up for pine-pole purchases. It was not infrequent a few years ago, on any sizable pole order, for delivery to be deferred 60 to 90 days. Proper deliveries on extensive requirements almost necessitated the buyer's commitments to a yearly contract basis, or to the using company carrying a large stock on its own pole-storage yards. Today, in line with the "hand to mouth" purchasing policy that successfully prevails in so many industries, the

purchaser finds it possible to place pole orders in any quantity for immediate shipment; and gets such shipment. His carrying of pole stocks is no longer necessary for he finds that the properly organized creosoter can frame and then treat any ordinary order for poles and have it on outbound cars in 24 working hours. Framing should always be done before treatment. Thus there are no untreated areas open to infection; also, the pole reaches the line ready to go into the ground.

Pretreatment

This matter of framing brings us to another development of the treating industry, called the pretreatment of poles. This method was originated by one of the creosoting companies in order to meet the demands of the industry for creosoted pine poles on a quantity—quality—prompt-shipment basis. Briefly the process is this: The untreated poles, seasoning on the creosote-plant yard, reach the point where they are ready for treatment. If there are no orders on which they then apply, the poles are given a Rueping empty-cell treatment with 4 lb. of creosote final retention per cubic foot. They can then go back to the storage yard perfectly protected against season-decay. Later, when an order is received on which the poles will apply, they are framed, and then retreated. If the customer's order is for an 8-lb. treatment, 4 lb. more of creosote per cubic foot is injected into the pole, the Rueping process again being used. Thus, pretreatment prevents framing after treatment; it removes any tendency to hold untreated poles on the seasoning yard until decay begins in them; it is an economy to both the using company and the creosoter.

Increasing Labor in Relation to Pole Service

As a final recommendation, it is advisable that the buyer recognize the steadily increasing costs of timber and of labor. There is sometimes a tendency to look askance at the purchase of high-grade poles, the life of which is known to average 30 to 35 yr., when the line may not be used for that long a period. Yet the untreated pole, or the under-treated pole, purchased for an expected life of the shorter period, begins to require replacement early. The higher timber and labor costs that are indicated for a few years hence may more than offset the larger initial investment in poles of long life.

* * *



The Boston & Albany's "Wolverine" at Charlton, Mass.

Railways Exceed Hoover Pledge for Expenditures

Executives meet at Chicago to consider several important railroad problems

THE extent to which the railways of this country have co-operated with President Hoover in maintaining employment and business progress is indicated in a report submitted by the Bureau of Railway Economics at the regular spring meeting of the Association of Railway Executives, held at the Blackstone hotel, Chicago, on May 16, following a special meeting of the American Railway Association at the Stevens hotel in that city on the previous day.

This report showed that the capital expenditures actually made by the rail carriers in the first quarter of 1930 exceeded by \$11,772,000 the estimate which they submitted at the conference of industrial leaders in Washington last December in an effort to co-operate with the president in promoting prosperity for the country. Railway capital expenditures during the first three months totaled \$223,772,000, an increase of \$96,653,000 over the corresponding period of 1929, and of \$95,344,000 above the same period of 1928. Of the total, \$89,070,000 was devoted to the purchase of new equipment, compared with \$37,642,000 for the first three months of 1929, while roadway and structures expenditures aggregated \$134,702,000, compared with \$89,477,000 for the same period in 1929.

In the first three months of this year, the railroads installed 24,739 freight train cars, an increase of 16,195 cars compared with the number installed during the same period in 1929. Passenger train cars placed in service in the first quarter totaled 472, a decrease of 453 under the same period the year before. Locomotives installed totaled 189, compared with 118 in the first three months of last year, and with 435 in the first quarter of 1928.

On April 1 the railroads had 37,117 freight cars on order, compared with 42,561 on the same day in 1929. Passenger train cars on order totaled 688, compared with 615 on April 1 last year, while locomotives on order on April 1 of this year aggregated 442, compared with 372 in 1929.

Nature of Expenditures

Capital expenditures for locomotives in the first three months of this year amounted to \$14,064,000, compared with \$10,517,000 during the corresponding period of last year. For freight cars, expenditures amounted to \$62,962,000, compared with \$14,168,000 in the first quarter of 1929. For passenger cars, capital expenditures in the first three months of this year amounted to \$7,889,000 compared with \$10,835,000 for 1929.

Capital expenditures for additional main tracks, yards and sidings in the first three months of 1930 amounted to \$27,608,000, compared with \$20,089,000 during the corresponding period last year. For heavier rail expenditures totaled \$10,356,000, compared with \$8,502,000 in 1929. For shops and enginehouses, including machinery and tools, expenditures totaled \$8,361,000, compared with \$5,479,000 in 1929, while for station facilities and office buildings, capital expenditures amounted to \$23,774,000, compared with \$11,607,000 in 1929. Bridges, trestles and culverts absorbed \$15,801,000 compared

with \$12,572,000 in 1929. For all other improvements, \$48,802,000 were expended in the first quarter of this year, an increase of \$17,571,000 compared with the same period in 1929.

Other matters of a routine nature were considered at the executives' meeting. Alfred P. Thom, general counsel of the Association of Railway Executives, made a verbal report on the general legislative situation, so far as it affects the railroads. V. V. Boatner, president of the Chicago Great Western, and E. S. French, president of the Boston & Maine, were elected members of the executive committee, the former to succeed the late Samuel M. Felton, formerly chairman of the board of the Chicago Great Western, and the latter to fill the vacancy caused by the death of George Hannauer, who was president of the Boston & Maine.

Special Session of the A.R.A. Dockets Five Subjects

The special session of the American Railway Association held on May 15 at the Stevens hotel occupied the entire day. The program included a report of the Car Service Division on transportation conditions, in which M. J. Gormley, chairman of the car service division, described plans for handling the seasonal crop movement; a report on the power brake investigation, by Harley Johnson, director of research of the A.R.A.; a report of the board of directors, by R. H. Aishton, president of the association; a discussion of damage to fresh fruits and vegetables, in which F. E. Winburn, special representative of the Freight Claim division, W. S. Jenson, superintendent of perishable freight inspection of the Merchants Despatch, Inc., A. J. Lorion, an engineer of the Freight Container Bureau, and R. G. Fagan, superintendent of freight protection of the Southern Pacific, participated; and a report of the joint Committee on Grade Crossing Protection, by W. J. Towne, chief engineer of the Chicago & North Western. The various portions of the program were supplemented by motion pictures and stereopticon slides.

Damage Arouses Much Interest

Damage to fresh fruits and vegetables aroused considerable interest and resulted in the adoption of two resolutions affecting the settlement of claims and involving top icing. The portion of the program devoted to damage to fresh fruits and vegetables was divided into five parts—the problem, conditions at destination point, conditions at initial point, prevention efforts of origin line and the remedy.

F. E. Winburn outlined the problem, calling attention to certain facts and phases. He said that while the loss and damage account as a whole has decreased from \$96,000,000 in 1921 to \$37,000,000 in 1929, notwithstanding increased car loadings, which jumped from 39,000,000 to more than 52,000,000, one class of commodities, the fruit, melon and vegetable group, has not



Failure of Barrels Often a Result of Having Been in Cold Storage

responded to the general effort for reduction, the payments on these commodities in 1929 being \$10,366,000, or 27.8 per cent of the total loss and damage bill. Since 1922 all loss and damage has decreased approximately 22 per cent, whereas the charges to fruits, melons and vegetables have increased 21 per cent. He cited delay, temperature failure and general damage as the three major causes responsible for loss and damage, and showed that since 1922, payments charged to delay had decreased 39 per cent, and those to temperature failure 35 per cent, while the charges to general damage on broken package have increased 132 per cent.

Destination Conditions

W. S. Jensen outlined conditions at destination, associating the fruit and vegetable conditions which confronts the delivering carriers with the details of an operation that involves every possible phase of freight handling. In support of this contention, he displayed stereopticon views showing the result of poor containers. As an effective way of protecting the carriers' interests, and at the same time not jeopardizing the claim rights of the shipper or receiver, he suggested that the carriers secure a reliable commodity report at the time of placement and during delivery. Another recommendation was a reliable service report covering conditions as they exist at the time of placement, and service features that will function during the delivery process to accomplish as nearly perfect delivery as is practically possible.

Conditions at initial points were described by A. J. Lorion, who summarized the activities of the freight container bureau in developing containers, and methods of loading and stowing. He said that 20 to 40 per cent of the shipments of fresh fruit and vegetables arrive in good condition. Thirty per cent more are accepted by the receiver while the remainder contribute to payments because of improper car loading, the correction of which can only be accomplished at origin. He also described the efforts that are being made to "sell" the idea of good containers and loading to shippers, citing the bureau's efforts in Florida, Georgia, Texas, Mississippi and Tennessee.

Prevention Efforts of Origin Lines

R. G. Fagan described the prevention efforts of originating lines, showing that the large claims on fresh fruits and vegetables are due to a laxity on the part of the delivering carriers at the time of delivery rather than to the containers and loading prescribed by the originating line. In support of this contention, he described the results of a survey made by the Pacific Coast carriers in 1925, which did not show that any particular container or method of loading caused excessive claims, and an-

other experiment made in the same year on claims for cantaloupes. The result of the latter survey showed that the amount paid per car delivered varied from \$1.09 to \$23.89, depending on the delivering station. He also offered a statement covering 99,000 cars of lettuce and citrus fruit shipped from California and Arizona during 1927. A total of 51,000 cars, or 51 per cent, were delivered at 28 eastern markets, and the claims paid on these cars amounted to \$14.49 per car. In contrast, claims paid on 48,000 cars delivered at all other points amounted to \$3.79 per car.

Another statement to which he referred covered 120,000 cars of fruits, melons and vegetables shipped from Southern Pacific stations during six months of 1929. By applying the 1928 delivery percentages, as shown in the Bureau of Railway Economics Bulletin No. 37, to the six months' movement in 1929, he estimated that 47.6 per cent, or 57,000 cars, were delivered at 30 eastern markets, on which the amount paid per car during that period averaged \$18.25, as compared with \$3.24 per car for claims paid on 63,000 cars delivered at all other points.

In summarizing, he said it is apparent from the fact that 50 per cent of the consignments are delivered at a claim rate of approximately \$3.25 per car that one must look for causes other than the container or loading as the reason for an average claim rate five times as great on cars delivered at eastern markets. He felt that investigations at high claim rate delivering points by the weighing and inspection bureaus or others not responsible for such conditions will develop that many exceptions noted on delivery receipts are not warranted by the condition of the freight, and that numerous exceptions which do exist are caused after the cars arrive at destination.

Mr. Winburn, in outlining the remedy, presented two distinct angles, prevention and protection, the former including the things that can and should be done to detect the causes of these damages and to correct them, and the latter calling for proper supervision at destination points to insure an adjustment of claims on a basis of the damage done to the commodity and not merely to the container. As part of the remedy, he mentioned a circular issued by the Operating division on December 30, 1929, outlining regulations necessary for the protection of these commodities at destination points. This circular requires the carrier to determine the extent and cause of damage at the time of unloading, and, according to Mr. Winburn, about 75 per cent of the claims paid for damage to fresh fruits and vegetables are an outcome of damage to the containers and not to the commodity. Therefore, he said, the real key to the solution of this problem depends upon the inauguration of a plan at destination that will determine the actual commodity losses instead of the in-

<p style="text-align: center;">N.S.</p> <p>To THE NORTH <--> SOUTH RAILROAD COMPANY, Dc, For Charges on Articles Transpaid:</p> <p style="text-align: right;">AM 40 Printed in U. S. A.</p> <p>CONSIDERER. RICHARD ROE</p>		DATE 4/23/30		PRO. NO. 84321	
		SHIPMENT			
DESCRIPTION		ROUTING		OWNER OF CARGO OR SHIPMENT	
Way-Bill From	Way-Bill Date and No.	Full Name of Shipper		Car Number and No.	
ARIZONA- Point and Date of Removal	4/13/30 Commuting Line Reference	JOHN DOE Previous Way-Bill Reference		XYZ 12345- Original Car Number and No.	
NUMBER OF PACKAGES, AMOUNTS AND MARKS		WEIGHT	DATE	WEIGHT	ADVANCES
320-STD L.A.-CRATES LETTUCE-		24320	178	428 50	PREPAID
RULE 240				16 00	
RULE 242				18 00	
SLC.				461 50	TO COLLECT
<i>EXCEPTION ON DELIVERY</i> <i>Subjected by Merchant to Deposit, Inc.</i> <i>as carriers delivered in batches</i> <i>headers required to be taken</i> <i>carriers retain right to test</i> <i>headers required to be with</i> <i>carriers before payment is made</i> <i>4-23-1930</i>					
LOCATION		MAILED		TOTAL	
DRAG	10				
		PAID PAYMENT			
				<i>4/28</i>	
				<i>Bil Smith</i>	

An Informative Exception Notation was Recommended

definite practices in use whereby the door is left open for speculation. He also stated that the establishment and observance of the regulations outlined by the circular will result in a saving of at least \$3,000,000 per annum.

Resolutions Adopted

Following this general discussion, G. W. Lupton, assistant to the vice-president of the Atchison, Topeka & Santa Fe, offered a resolution that the American Railway Association endorse the program agreed upon for the correction of the destination troubles, as outlined in operating division circulars E-1-94, December 30, 1929, and urge the necessary action on the part of both origin and destination lines to insure the accomplishment of the desired results. T. C. Powell, president of the Chicago & Eastern Illinois, did not believe that the latter portion of the resolution was strong enough, and offered an amendment whereby the responsibility for these claims be placed with the president of each of the railroads involved. The resolution and amendment were adopted by the association, following a statement made by M. C. Kennedy, vice-president of the Pennsylvania, to the effect that the eastern carriers are establishing a central inspection bureau that will inspect all cars received in the metropolitan district of New York. Following the adoption of this resolution, Mr. Kennedy offered another calling upon the American Railway Association to investigate top icing, with a view to developing some method of refrigeration that will eliminate damage resulting from ice being placed on top of the load.

Car Service Division Report

In the report of the Car Service division Mr. Gormley stated that there will be an adequate supply of box cars to protect the seasonal crop movement, provided there is no abnormal delay at loading or unloading points. There is reason to anticipate some difficulties this year in connection with the annual wheat movement unless conditions now prevailing change materially, one of these being the especially large quantities of grain now in storage which may prevent the prompt unloading of the new crop at terminal markets. As has been customary in previous years, he said, empty cars adapted to the loading of grain are being returned as rapidly as possible to their home roads in the grain raising states, so that they will be available as soon as the crop movement begins. It is the opinion of the Car Service division that the wheat loading railroads will be prepared this season with a supply of grain box cars adequate for a heavy initial movement, but that in the event that terminal grain storage conditions do not improve, they must be ready to take prompt measures, if and when necessary, to prevent a serious congestion of grain traffic at markets or ports. A preliminary forecast of the winter wheat production in 1930 indicates a crop 5 per cent less than in the last two years, and about equal to the five-year average for 1924-28. Spring wheat acreage is expected to be slightly less than last year.

Another portion of the report dealt with heavier loading, campaigns for which have been started by some industries. A check recently made covering a representative movement of 33 commodities which one industry receives in volume, indicates substantial increases in loadings ranging from 15 tons per car on alfalfa meal, to five tons per car on grain screenings. The increased revenue per car ranges from \$162 to \$11.50. A study of this company's outbound shipments of 21 commodities indicates increases in all but one, ranging from 15 tons per car on one commodity to one-half ton on another, which is a very light commodity. This company feels it is to its interest to insist that all incoming shipments be

loaded as heavily as possible, and that outgoing shipments be loaded as heavily as trade conditions will permit.

Power Brake Investigation

The report on the power brake investigation was made under the direction of C. E. Chambers, superintendent of motive power and equipment of the Central of New Jersey, and chairman of the Committee on Safety Appliances of the American Railway Association, and Harley Johnson, director of research of the American Railway Association. It was accompanied by motion pictures of the tests conducted in Northern California and Oregon and of the laboratory tests at Purdue University. Mr. Johnson described each step of the investigation, starting with the preliminary report and conclusions of the Interstate Commerce Commission on July 18, 1924, wherein that body stated that improvements in the operation of power brakes are essential and must be effected. He then proceeded with the details of the power brake tests conducted at Purdue University from November 30, 1925, to January 24, 1929. In order to make these tests so thorough that the results would be conclusive, he said, the human element in recording data was eliminated by the development of special apparatus.

The main portion of the report was devoted to the road tests which the Mechanical division started on the Southern Pacific on August 1, 1929, and which are still in progress. Mr. Johnson stated that it is too early to give results, as any conclusions must await the completion of the tests and the compilation and comparison of results since the power brake question must be given serious consideration upon the completion of these tests. If these tests should show that an improvement in freight brakes is necessary or advisable at this time, he said, it is absolutely necessary that any change in the present equipment or any new equipment must not only take care of present day requirements, but must, as far as possible, anticipate the requirements of freight train operation 15 or 20 years in the future. In the past there has been a periodical improvement in brakes for freight trains as the weight and length of trains and the speed of operation have increased. The present type K freight brake was adopted by the association as standard about 20 years ago, and although it was a big step in advance, freight trains have increased greatly in weight, length and speed since that time.

Motion Pictures Show Tests on Southern Pacific

The report was supplemented by the projection of motion pictures showing the actual power brake tests on the Southern Pacific. The pictures were taken by the photographic department of the Atchison, Topeka & Santa Fe, and clearly show the method of procedure and elaborate apparatus used in the tests. Portions showed a train of 150 tank cars leased from the General American Tank Car Corporation being hauled over level track in such a way that the telephone system connecting the locomotive, the three dynamometer cars and seven caboose cars were clearly visible. Another portion of the picture portrayed a test train of 86 cars being pulled up a 3.3 per cent grade with six locomotives. The maximum length of train at this point, according to present operating standards, is 56 cars.

Grade Crossing Protection

The report of the Joint Committee on Grade Crossing Protection which was presented by the chairman, W. J. Towne, chief engineer of the Chicago & North Western, dealt with the report of the Committee on the Protection of Railway Grade Crossings and Highway Intersections,

to be submitted to the national conference on Street and Highway Safety in Washington on May 27-29. There are recommended standard flashing-light and wig-wag signals now before the association, these having been prepared by the Construction and Maintenance sections working through the American Railway Engineering Association, and being identical with those of the Signal section, American Railway Association. The joint committee has recommended the continued use of the Ameri-



Standard A. R. A. Signal on Erie—New Standard Calls for Addition of Stop Sign

can Railway Association's present standard automatic flashing light and wig-wag highway crossing signal with the following changes and additions:

1. Lights on every signal shall shine in both directions along the highway.

2. Circuits shall be arranged so that crossing signals will operate until the rear end of the train reaches the crossing, and then cease.

3. (Reflector Type) Each crossing signal shall be equipped with a square sign and black background and white reflecting buttons displaying the words "Stop on Red Signal," toward the highway traffic approaching the near side of the crossing.

Or when conditions warrant—

(Light Type) Each crossing signal shall be equipped with an illuminated sign displaying the word "Stop" in red letters toward the highway traffic approaching the near side of the crossing, only while the signal lights are flashing or the wig-wag swinging.

4. Bells should be used on crossing signals only when required by public authorities or local conditions. Bells should be arranged so as to ring while signal lights are flashing or the wig-wag swinging.

Mr. Towne also considered the necessity of educating the public in connection with the adoption of a standard. Experience, he said, indicates that there is considerable

misunderstanding by highway users of the meanings of signals, and many apparently do not know what is expected of them when a signal is displaying a red light. To eliminate this misunderstanding, the committee commended the efforts of the Safety section of the American Railway Association to eliminate this misunderstanding, through its nation-wide Careful Crossing Campaign. To carry out the work of the committee, he asked that close contact be maintained with the different authorities and that the carriers be furnished with the information which the committee gets together in order that a uniform and firm attitude may be presented on the problem. The report was supplemented by lantern slides which showed the standard signal and many others being used by railroads throughout the country.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended May 10 was less than that in the preceding week, amounting to 933,931 cars. This was a reduction of 115,029 cars as compared with the corresponding week of last year and of 68,480 cars as compared with 1928. Grain and grain products showed a slight increase as compared with last year but all other commodity classifications showed reductions and loading of miscellaneous freight was 43,999 cars less than in the corresponding week of 1929. All districts reported reductions as compared with both 1928 and 1929. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, May 10, 1930

Districts	1930	1929	1928
Eastern	216,007	246,204	238,713
Allegheny	194,000	219,954	203,389
Pocahontas	51,925	59,027	55,706
Southern	131,850	142,473	143,906
Northwestern	141,444	163,130	146,934
Central Western	127,035	142,341	137,627
Southwestern	71,670	75,831	76,136
Total Western Districts	340,149	381,302	360,697
Total All Roads	933,931	1,048,960	1,002,411
Commodities			
Grain and Grain Products	37,466	36,883	42,123
Live Stock	24,278	26,302	27,064
Coal	137,713	153,461	159,713
Coke	12,175	15,188	10,247
Forest Products	53,617	69,330	67,174
Ore	51,515	71,594	38,251
Merchandise L.C.L.	249,244	264,280	261,198
Miscellaneous	367,923	411,922	396,641
May 10	933,391	1,048,960	1,002,411
May 3	942,899	1,051,935	978,053
April 26	907,174	1,051,885	963,007
April 19	892,881	1,005,880	945,289
April 12	911,310	973,152	912,659
Cumulative totals, 19 weeks	16,765,594	18,243,565	17,512,967

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended May 10 totaled 60,929 cars, an increase over the previous week of 1,902 cars but a decrease of 7,362 cars from the same week last year.

Total Cars Loaded	Total Cars Rec'd. from Connections
Total for Canada	
May 10, 1930	60,929
May 3, 1930	59,027
April 26, 1930	56,661
May 11, 1929	68,291
Cumulative Totals for Canada	
May 10, 1930	1,082,554
May 11, 1929	1,202,457
May 12, 1928	1,192,229
	696,360
	825,581
	759,800

Daily Records Aid Operations

Missouri Pacific officers supplied with current data in usable form

SUPERINTENDENTS on the Missouri Pacific never need be at a loss to know anything relating to their divisions. In accordance with the policy of this road to supply its officers with current and complete data, two standard record books have been evolved. The first of these, the superintendent's running record book, provides the officer in charge of each division with a complete daily analysis of operations. The second, the trainmaster's daily pocket overtime record, supplies those officers with all information necessary to control overtime.

While it is almost impossible to allocate definitely the direct benefits that have resulted from the use of these daily statistics, the great improvements in operation and reduction in overtime on the Missouri Pacific are indicative of the fact that the books have been of considerable assistance. A further indication of their value is to be found in their popularity with the superintendents and trainmasters, all of whom find the statistics invaluable aids in the supervision of the territories under their control.

Complete Information Provided

The superintendent's running record consists of 37 groups of daily statistics and 16 groups of monthly

Dates	FREIGHT AND MIXED TRAIN MILES				TOTAL GROSS TON MILES											
	Today		To date		Last Month		Last Year		Today		To date		Last Month		Last Year	
	Procrata	Em.	Procrata	Em.	Procrata	Em.	Procrata	Em.	Procrata	Em.	Procrata	Em.	Procrata	Em.	Procrata	Em.
1																
2																
3																
4																
5																
6																
7																
8																

Specimen Page from the Superintendent's Running Record

statistics. Printed forms of uniform size are provided, so that the book may be kept in convenient loose-leaf form. Several of the groups are subdivided so as to cover the subjects more thoroughly, so that, in all, the book consists of 77 pages, 51 of which are devoted to daily and 16 to monthly statistics. Each page of the daily statistics provides space for entering each day's figures, together with comparisons for the preceding year, so that an immediate check may be had on the relative efficiency of each of the subjects covered. The entire book is carefully indexed, so that any information desired may be found easily. The range of subjects covered is a wide one. Under the heading of train performance records, the following daily statistics are given:

Maintenance of Passenger Train Schedules
Performance of Important Passenger Trains
Cause of Delay to Passenger Trains
Summary of Red Ball Train Performance
Detailed Performance of Red Ball Trains
Cause of Delay to Red Ball Trains

The general records show the percentage of trains maintaining their schedules, while the detailed reports give the movements of the trains, showing the passing time at each of the important stations, for ready reference in checking.

A check on the comparative daily business handled is provided by the following:

Freight and mixed trains run
Train hours
Freight and mixed train miles
Gross ton miles
Gross tons per train mile
Cars on division
Cars of commercial freight loaded
Loads received from and delivered to connections

With these figures as a basis, it is a relatively easy matter for the superintendents, with their intimate knowledge of their own divisions, to detect at once any inconsistencies in the operating performance figures, which are also complete, and cover the following subjects:

Train miles per hour
Gross ton miles per hour
Loaded car miles
Empty car miles
Per cent loaded to total car miles
Average miles per car per day—by classes
Initial terminal detention to freight trains and final terminal overtime

Class of Engine	COST PER OVERTIME HOUR							
	Local Freight				Through Freight			
	Engr.,Frmn., Condr & 2 Brakemen	Engr.,Frmn., Condr & 3 Brakemen	Engr.,Frmn., Condr & 2 Brakemen	Engr.,Frmn., Condr & 3 Brakemen	Procrata	Em.	Procrata	Em.
8300-8651-8659	\$3.99	\$5.97	\$4.69	\$7.02	\$3.68	\$5.54	\$4.32	\$6.51
668, 2657-2672, 2700, 3600, 7800, 8601-8612	4.01	6.00	4.71	7.05	3.70	5.57	4.34	6.54
801-829, 901, 2301-2401, 2500, 2601-2656, 5500 Non-Booster, 6500, 7500, 7700	4.04	6.05	4.74	7.10	3.73	5.62	4.37	6.59
400, 500, 2402-2403, 6400-6444	4.09	6.12	4.79	7.17	3.78	5.70	4.42	6.67
1-180, 1151-1161, 1800, 5500-Booster, 6000 6445-6454, 6600,	4.13	6.19	4.83	7.24	3.83	5.76	4.47	6.73
1200, 1300, 1401-1570 Non-Booster 1699, 5200, 5301-5316	4.18	6.27	4.88	7.32	3.88	5.83	4.52	6.80
1424-1425, 1701-1714, 5335-5339	4.21	6.31	4.91	7.36	3.91	5.88	4.55	6.85
1121-1125, 1426-1570,Booster 1720-1729	4.26	6.38	4.96	7.43	3.95	5.96	4.59	6.93

The Trainmaster's Daily Overtime Record Shows Costs

The cross-check provided by these two sets of statistics is supplemented by a complete set of figures as to costs, together with figures on the man-hours and overtime. The overtime figures, while not as detailed as those supplied to the trainmasters, give the superintendents all the information they desire on this subject. The man-hour statistics are subdivided into 14 separate classifications, covering each of the branches of service under the superintendents' jurisdiction on the Missouri Pacific. These statistics cover the following items:

Freight train costs, wages, straight time, overtime and constructive time
 Overtime per train mile
 Total cost per train mile
 Overtime per 1,000 gross ton miles
 Total cost per 1,000 gross ton miles
 Overtime and constructive time in train service
 Man-hours
 Enginehouse labor and unit cost

Certain mechanical department statistics, insofar as they affect locomotive and car performance, are also given. These include the following:

Engine failures
 Hot boxes
 Time turning through freight engines
 Fuel consumption
 Bad order cars
 Mileage in power-engine assignment and in shops
 Caboose supplies
 Locomotive supplies

The yard situation is covered by a report showing the cars on hand daily, whether good or bad order, loaded or empty, and, for ready checking, the proper figures for normal operation are also given on each report. Cars on hand for 24 hours or more are given special attention on this report and show up prominently. The yard statistics are completed by another report which shows the switching engine hours, the cars handled, and the costs per switching engine hour, and per car handled.

Miscellaneous Reports

The daily statistics are rounded out by miscellaneous reports, such as trains tied up to avoid exceeding 16 hr.; train accidents; warehouse operation and personal injuries.

Thus, a complete daily check of every phase of divisional operations is available to the superintendents, giving them every facility to exercise competent supervision, and enabling them to employ their supervisory efforts where they will do the most good.

Monthly Statistics

In addition to the daily statistics, certain monthly figures are provided for superintendents. These are of value particularly in controlling expenses to meet the monthly transportation budgets; they also provide important information for general supervisory activities. These monthly figures include detailed statements on the following subjects:

Monthly payrolls
 Station earnings
 Passenger train earnings
 Overtime—all classes
 Constructive time—all classes
 Number of full time positions
 Transportation, maintenance of way and maintenance of equipment expenses compared with allotments
 Electric gas and water bills
 Stock struck
 Cost of handling coal
 Car bulletins

In addition, a monthly report on maintenance of way is included, which shows the cost of repairing track motor cars, amount of piling driven, number of cross

and switch ties renewed, and cost per mile of track repairs.

The Missouri Pacific has found that complete information is one of the chief aids in reducing overtime. The idea is that, if a supervisory officer does not know what a thing is costing, the likelihood is that it is costing too much. Accordingly, each trainmaster carries at all times a daily overtime record booklet, which is always kept posted up to date.

Trainmaster's Overtime Records

Every morning the trainmasters enter the previous day's overtime details, obtaining them from the train sheets or by telephone from the dispatcher's office. If neither of these methods of obtaining the information can be used, the details are telegraphed to the trainmaster on the line.

On the first of each month, the figures for the previous month and the previous year are transcribed into the booklet from the office records. Thus, the trainmasters have comparative figures available daily so that increases may be analyzed immediately, the causes determined and the necessary action taken.

The printed forms that make up the booklet provide space for all the details, expressed in terms of money as well as hours and minutes. To assist in showing cost, each booklet contains a table of overtime cost per hour, showing the amount of pro rata and punitive overtime payable on each of the various classes of engines in both local and through freight service.

By arming the supervisory forces with daily figures as to performances and costs, the accurate supervision of operations has been much facilitated, and the relatively small clerical expense involved has been much more than offset by the advantages gained.

I.C.C. to Inquire Into Motor Transportation

WASHINGTON, D. C.

THE rapid development of unregulated motor transport as a part of, in connection with, and in competition with the operations of railroads that are regulated under a law passed before the new method of transportation was heard of and which therefore does not recognize it has created so many complications and raised so many legal questions that the Interstate Commerce Commission has ordered a new investigation of the subject. The new inquiry is to cover particularly "the general matter of co-ordination of motor transportation of passengers and property on the public highways by or in connection or in competition with respondents (common carriers subject to the interstate commerce act), whether such motor transportation is performed by respondents directly or indirectly or through subsidiary or affiliated companies, or through control in any manner in whole or in part, or by other operators of motor vehicles" It is to be made "with a view to making such findings and taking such appropriate action as the facts developed by such investigation may warrant, and for the purpose of making such recommendations to Congress respecting such legislation as may be necessary or desirable in the public interest to accomplish further or more efficient co-ordination of motor transportation."

Co-ordination of rail and highway transportation was

included in the scope of the general investigation begun by the commission in 1926 on which it reported in 1928, and some of the conclusions then expressed deal with that phase of the subject, but there have been many new developments since that time and it is still uncertain as to whether the recommendations then made are to result in Congressional action at any early date.

Moreover, the Parker bill passed by the House and pending with many amendments in the Senate deals particularly with motor transport as an independent method of transportation somewhat apart from the system of railroad transportation which the commission has been regulating for over forty years. It treats the motor passenger vehicle as a competitor of the railways, to be regulated to some extent, but under statutory language differing from that applied to the railways, and it leaves the motor truck entirely unregulated, so far as interstate commerce is concerned. The commission's new investigation is apparently inspired by the observation of the activities of the new vehicle in occupying a part of the field which the commission has heretofore always had under its jurisdiction, without coming within the scope of the law which the commission administers.

Scope of Investigation

The broad scope of the investigation is indicated by the statement in the order, Docket No. 23,400, adopted May 12 and made public May 15, that it is to include an inquiry into: "The arrangements under which such motor transportation is performed by or in connection or in competition with respondents; and the legality and propriety thereof; the corporate organization, and financial and business relationship existing between respondents and corporations or the stockholders thereof engaged in motor transportation of passengers or property by or in connection or in competition with respondents; the extent to which the property of respondents or the time of employees thereof is devoted to motor vehicle operations to supplement, replace or curtail the rail, water, or rail-and-water operations of respondents, or as feeders or distributing agencies thereof; the rates, fares, and charges, whether local, proportional, or joint, the schedules thereof, and the manner of filing and publishing the same; the extent and effect of motor-vehicle competition upon the traffic and revenues of respondents; the manner in which the accounts of revenues and expenses of such motor-vehicle operations are kept; whether the revenues from such motor-vehicle operations are compensatory for the cost thereof; and such other matters as may be relevant to a full and complete investigation into the co-ordination of motor transportation."

All Common Carriers Respondents

All common carriers by rail, water, or rail and water, subject to the interstate commerce act, are made respondents to the proceeding, which is to be assigned for hearing at such times and places as the commission may direct.

No explanation of the reasons for undertaking the new investigation was offered by the commission beyond the preliminary statement in the order "that various matters growing out of the co-ordination of transportation of passengers and property in commerce by motor vehicles on the public highways by or in connection or competition with common carriers subject to the interstate commerce act, hereinafter called respondents, are being presented to this commission for its consideration as to the legality and propriety thereof;" and that the commission is directed by law to keep itself in-

formed as to the business of the carriers and to report to Congress with its recommendations.

Even before the former investigation was ordered the commission had been confronted with questions as to the legality and propriety of arrangements under which motor coaches or motor trucks are operated by or in connection with the railways. It had been asked to deal with applications for authority to establish joint rail and motor coach fares and had found that it had no authority to do so under a law applying specifically to transportation by railroad or partly by railroad and partly by water. Since then not only has motor competition increased but the use of motor vehicles for the carriage of passengers and freight has developed into an important part of the operations of the railroads themselves, directly or indirectly, and the number of problems put before the commission by reason of that fact has increased. Not only has the commission no law under which to deal with these problems, but the bill pending in Congress does not even attempt to deal with some of them, and the Senate bill proposes to prohibit railway ownership of motor coach lines.

Factors Leading to Probe

It is understood that one of the factors in the situation that led the commission to order the investigation was a complaint that in one instance at least a railroad was using a controlled motor truck company to cut under published rail rates. It also has before it a complaint charging that a railroad has violated provisions of the interstate commerce act in acquiring control of a company operating motor coach lines. It recently had before it requests that it suspend a tariff filed by the Baltimore & Ohio proposing to establish special coach rates on a basis low enough not only to meet the rates of competing rail-motor lines but also of competing motor coach lines. It has also had to deal with reductions in rates proposed by railways to meet the competition of motor-truck lines.

It is also noted that the order for the investigation was issued shortly after the commission had heard arguments in the case in which the Pennsylvania has filed a tariff proposing to meet to some extent the competition offered by the Baltimore & Ohio motor coach service at New York and in which both the Pennsylvania and other roads serving New York are asking the commission to investigate the B. & O. practice. No question is raised because the B. & O. takes its passengers as far as New York by ferry, because ferries were in existence when the law was passed and are considered as part of the railroad system, but the Pennsylvania takes the position that the B. & O. is furnishing a service beyond what is covered by tariff rates and that if the B. & O. can do it without a tariff it can apparently do the same thing even if the commission refuses to approve its tariff. The other roads are pointing to the controversy between the B. & O. and Pennsylvania as an indication that all of them may be forced to furnish additional service without compensation in additional revenue.

The commission seems to be concerned lest part of the transportation service may escape its jurisdiction, just as the process of acquisition of control of railroads has been taken out of its jurisdiction to some extent by the activities of holding companies, but it also is concerned as to the effect of motor-vehicle competition on the traffic and revenues of the railways.

The full text of the commission's order in this investigation appears in the news department of the Motor Transport Section, which is published as Section II of this issue of the *Railway Age*.

New Books

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Boomer Bill—His Book, by I. M. Brown. "In creating Boomer Bill, the Switchman, the author has had in mind preserving some of the experiences and philosophies of the railroad employee and demonstrating how his loyalty to his railroad carries him over the rough places of the life he has chosen." The persons mentioned in the stories are real persons on the Missouri Pacific, and the stories appeared originally in the Missouri Pacific Lines' Magazine under the title of "Switch Shanty Stories." An excellent volume to hand to non-railroaders who wonder what railroaders do with their time. 360 p. Pub. by Von Hoffman Press, St. Louis, Mo., \$2.25.

Facts and Figures of the Automobile Industry, 1930 Edition. This useful annual volume makes its appearance this year in a gay modernistic cover. The figures on truck transportation and the map of intrastate bus routes may be of special interest while the table, p. 48-49, on ranking of the states in registration is artistic as well as informative. 96 p. Pub. by National Automobile Chamber of Commerce, New York City. *Apply*.

The Future of Railroad Transportation. Addresses and resolutions of the round table conference on "What's ahead for business in railroad transportation" at the 18th annual meeting of the Chamber of Commerce of the United States. The chairman of the conference was President Sargent of the Chicago & North Western, and the secretary, Richard Waterman. Addresses and discussions were contributed by Harry A. Wheeler, Emory R. Johnson, Alfred P. Thom, F. C. Dillard, Moultrie Hitt, Elisha Lee, W. I. VanDusen, S. A. Thompson, W. C. Cowling, Arthur Hale, A. B. Barber and Wm. R. Dawes. Resolutions were on consolidation, rule of railway rate making, railway revenues, and development of international air transportation. 56 p. Pub. by Chamber of Commerce of the United States, Washington, D. C. *Apply*.

Livestock Truckage Rates in Illinois, by R. C. Ashby. "With a comparison of marketing expense by truck and by rail." "Comparison of truck and freight rates" p. 127-134. "Comparison of net marketing expense by truck and by rail" p. 149-162. Bulletin No. 342. 175 p. Pub. by University of Illinois Agricultural Experiment Station, Urbana, Illinois. *Apply*.

Periodical Articles

The Interstate Commerce Commission and the Railroad Terminal Problem, by M. L. Fair. "We have come to realize that public interest can best be served by greater cooperation and unification in railroad terminal operation. The purpose of the earlier regulation 'was not to thwart competition in any way but to check monopoly.' . . . But now, with effective control over rates established, there is a new attitude toward competition, especially when it results in great economic wastes . . . A regulatory policy that would effect greater flexibility and cooperation in terminal operation would meet with public favor in so far as economy and efficiency could thereby be realized." p. 491, 492. Quarterly Journal of Economics, May 1930, p. 462-492.

Transport Developments in 1929, by R. Bell. "Taking first the picturesque aspect of matter in motion, the lovers of speed for its own sake had a great time." (Summarizes speed records of rail, air, and motor transport made in 1929) p. 334. Acceleration of mails and freight, developments in Great Britain, on the continent of Europe, and in America, and prospects for the future discussed. Journal of the Institute of Transport, May 1930, p. 334-343.

Looking Backward

Fifty Years Ago

The renewed prosperity which the country has enjoyed for the past year was interrupted on May 21 when the president of the Philadelphia & Reading [now the Reading] and the Philadelphia & Reading Coal & Iron Company announced that the Railroad had suspended payment, and had failed to meet notes and drafts of \$420,000. The two companies represent a capital of about \$125,000,000. On May 23, on the application of the company, the United States court at Pittsburgh, Pa., appointed three receivers, who were directed to operate the railroad and continue the mining operations of the coal and iron company. Over-production of coal and the depressed condition of the iron trade, affecting the subsidiary of the railroad, were the cause of the failure.—*Railway Age*, May 27, 1880.

The committee on performance of locomotives of the American Railway Master Mechanics' Association [now Division V—Mechanical, American Railway Association], in its report to the annual meeting at Cleveland, Ohio, states that it is "of the opinion that the consolidation engine is destined to be the coming engine for heavy freight service. At a speed of not to exceed 12 miles per hour, it is best adapted, all things considered, for general freight service, while with a speed of not to exceed 15 miles per hour, the mogul engine will give very good results. For fast freight, and where a speed of 20 miles an hour is sometimes necessary, the American or eight-wheeled engines would no doubt be most economical."—*Railroad Gazette*, May 21, 1880.

Twenty-Five Years Ago

W. P. Kenney, assistant general freight agent on the Great Northern at St. Paul, Minn., has been appointed assistant to the fourth vice-president.—*Railway Age*, May 26, 1905.

The Vanderbilt plans for the construction of an international railway tunnel under the Detroit river, between Detroit, Mich., and Windsor, Ont., have been completed and it is expected that work will be inaugurated soon. The Canada Southern, now controlled by the Michigan Central through a 999-year lease, will be the holding company for enterprise. It is planned to place all roads on a rental basis for the use of the tunnel by their trains.—*Railway Age*, May 26, 1905.

Ten Years Ago

A. P. Russell, chairman of the valuation committee and assistant general counsel of the New York, New Haven & Hartford and vice-president of the Rutland, has been elected vice-president of the Central New England—*Railway Age*, May 21, 1920.

W. A. Colston, of Louisville, Ky., heretofore general solicitor of the Louisville & Nashville, was sworn in on May 10 as director of the newly created Bureau of Finance of the Interstate Commerce Commission. The director will be charged with the handling of certificates for disbursements from the \$300,000,000 revolving fund, the consolidation plan, the recapture of excess earnings of railways and the financial arrangements involved in the building of new lines and the abandonment of old lines.—*Railway Age*, May 21, 1920.

Exercise of the emergency powers conferred upon the Interstate Commerce Commission by the Car Service section of the transportation act to assist the carriers in dealing with the developing transportation crisis resulting from the shortage of equipment and other facilities that has accumulated during the war period and emphasized by the switchmen's strike, was formally requested in a petition filed with the commission on May 15 by the executives of 23 railroads.—*Railway Age*, May 21, 1920.

Odds and Ends of Railroading

"Minute That Seems a Year"

Time never seems to lag so terribly as when you are standing in a crowded dining car waiting for the fellow who is nearly through to finish his baked apple.—*New York Sun*.

Another Railroader-Author

Edgar Rice Burroughs, the author of the series of Tarzan books, of which millions of copies have been sold, was once a railway policeman for the Union Pacific at Salt Lake City, Utah.

Announcing Telegrams

In German railway stations great care is taken to see that telegrams to people on trains are delivered. A man meets each train, shouting the names of the passengers for whom he has telegrams. In addition, he carries a blackboard on a long pole, on which the names are written in chalk, in large letters.

Railroader-Soldier Author

William T. Scanlon, formerly chief rate clerk for the Illinois Central-Big Four at the Union Stock Yards, Chicago, has turned author. His novel, "God Have Mercy On Us," won the \$25,000 war novel contest sponsored by the American Legion magazine and the Houghton Mifflin Publishing Company.

Another Gigantic Waybill

A waybill 38 ft. long was recently produced at the central billing station of the New York Central at Thirty-third street, New York. It covered a shipment weighing 82,970 lb., from New York to Riverside, N. Y. There were six different classes of goods, in 1,307 packages, totaling 455 separate items.

Clerk-Athlete

Stella Walsh, of the auditor of freight accounts' office of the New York Central at Cleveland, Ohio, entered in the famous Millrose games in New York, entirely unheralded and unsung. She walked out amid applause, after twice breaking the women's world record for the 50-yard dash, indoors. Then she went to Philadelphia and clipped two full seconds from the world's record for 220 yards, following this by establishing a new world's record for 45 yards. Incidentally, her time for the 220-yard dash was so fast that it equalled the world's record for outdoors. Miss Walsh did no competitive running at all until last summer, when, in Europe, she met and defeated the fastest of Poland's and Czechoslovakia's women sprinters.

Missouri Pacific Builds Model Exhibition Trains

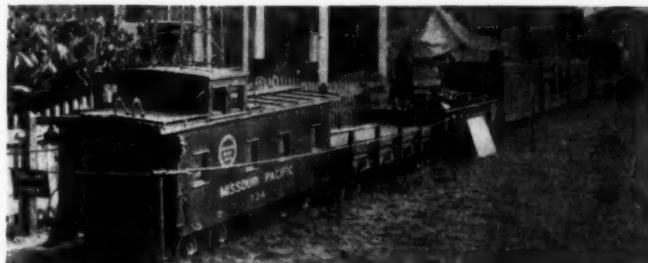
The Missouri Pacific constructed in 1927 and has had in use since that time two miniature trains for display as a part of its exhibit at state fairs throughout the railroad's territory. Each of the trains was constructed from blue prints of standard equipment, the dimensions being reduced to one-fourth, in the case of the freight train and one-fifth in the case of the passenger train, of their actual size.

The freight train consists of a locomotive mounted upon a tractor so that the gasoline engine exhaust simulates steam and smoke as it passes through the smoke stack. The cars in the train include a miniature box car, a refrigerator car, a tank car, a flat car, a coal car and a caboose. The coal and flat cars are loaded with products that might be hauled in that type of equipment. The small locomotive on the passenger train was also mounted upon a gasoline tractor to be driven from the cab. The passenger equipment is made up of an express-mail car, two coaches, a sleeping car and an observation car.

Immediately after they were built, the trains were exhibited throughout the season of 1927 at state and county fairs at Sedalia, Mo., Lincoln, Neb., Topeka, Kan., and Hutchinson, Little Rock, Ark., Memphis, Tenn., Shreveport, La., Beaumont, Tex., Tyler and Austin and at a number of points in the Rio Grande valley in Texas. It is estimated that during its first season of service the exhibit was in-



The Models on Display



Close-Up of the Freight Train Model

spected by nearly a million persons, while since its construction it has been viewed by several times that number.

In the succeeding years, the equipment has been in constant demand in Missouri Pacific Lines territory for use in parades and other celebrations sponsored by local civic organizations. At each point where the trains were used, boys in the community were selected to make up two regulation crews.

Conductor-Bank President

When an organized party of federal government employees from Washington, D. C., makes its vacation tour to Alaska, next summer, the members will ride on a railroad train which probably is the only one in the world which is served by a conductor who also is a bank president. Frank L. Knight is a passenger conductor on the Alaska Railroad and also is president of the First National Bank of Anchorage, Alaska. Thousands of tourists from the United States and all over the world have come in contact with him in their travels to Alaska. Mr. Knight is a native of Lafayette, Ind., and served on American and Mexican railroads before going to Alaska, where he first became a dock foreman, then a railroad brakeman, and has been a conductor since 1916.

NEWS of the WEEK



REGIONAL CONFERENCES of the Steam Railroad Section of the National Safety Council are scheduled to be held as follows: On June 4 at Green Bay, Wis.; on June 26, at Wisconsin Rapids, Wis.; on June 26 and 27 at Duluth, Minn., and on October 16 at Memphis, Tenn.

THE CITY OF DALLAS, Texas, applying to the Railroad Commission of Texas for an order requiring a rearrangement of facilities of the Dallas Terminal Railway & Union Depot Company has lost its case, the commission holding that the changes would cost the railroad about \$500,000 and are not necessary for adequate service to the public.

THE CHICAGO & ILLINOIS MIDLAND will withdraw its offer to rehabilitate the Chicago, Springfield & St. Louis on June 30, if it does not secure additional right-of-way by that time. Residents along the line have failed to show any interest in the improvements proposed by the Chicago & Illinois Midland. An outline of the offer was published in the *Railway Age* of April 12, page 880.

THE INTERSTATE COMMERCE COMMISSION by Division 6, has issued a report approving, with certain exceptions, the installation of the Union automatic train-stop device, continuous induction type, code system, on the Long Island; 21 miles on the North Side division and 27 miles on the Montauk division. The total cost of both installations, including some new wayside signals and some changes in existing signals, was \$1,581,646.

Court Delays Little Rock Freight Station Construction

Construction of a freight station at Little Rock, Ark., by the Missouri Pacific has been delayed by a decision of the United States Circuit Court of Appeals at St. Paul, Minn., on May 12 which sustained an earlier court order restraining the railroad from proceeding with construction without a certificate of convenience and necessity from the Interstate Commerce Commission. Litigation against the Missouri Pacific was originally instituted by the Chicago, Rock Island & Pacific and the M. P. was enjoined from

petitioning the Arkansas Railroad Commission for authority to construct a connection between its present tracks and the site of the proposed station. The restraining order of Federal Judge Martineau upheld the contention of the Rock Island that the proposed Missouri Pacific construction constituted an extension of its lines. The Missouri Pacific maintained that no extension was contemplated, within the meaning of the law, while the Rock Island specifically objected to the construction of a crossing over its tracks.

Wage Statistics for February

Class I railways reported to the Interstate Commerce Commission a total of 1,544,317 employees as of the middle of February, according to the commission's monthly tabulation of wage statistics. The total compensation was \$213,198,615. Compared with the returns for the corresponding month of last year this is a decrease of 61,933 in the number of employees, or 3.86 per cent, and a decrease of 4.42 per cent in compensation.

Motor Coach Bill Recommitted

The bill for the regulation of interstate motor vehicle transportation on public highways, which has been for some time on the calendar of the Senate after having been passed by the House, was re-committed to the committee on interstate commerce on May 20 at its request for further consideration. A large number of proposed amendments to the bill had been submitted to the Senate. Chairman Couzens of the committee stated that the bill would be reported back to the Senate promptly.

Waugh Company Denies F. T. C. Charges

The Waugh Equipment Company and Arthur Meeker, Frederick W. Ellis and J. B. Scott have filed with the Federal Trade Commission answers which constitute general and specified denials of most of the allegations contained in the complaint issued against them by the commission on April 3, charging the use of unfair methods of competition in the solicita-

tion of purchases of draft gear equipment from railways on the basis of the traffic of Armour and Company.

The Waugh company denies that the majority of its common stock is owned or controlled by officers and employees of Armour & Co. or that it had entered into an agreement or understanding with the individual respondents, Messrs. Meeker, Ellis and Scott, whereby they agreed to use the volume of traffic of Armour and Company and its subsidiaries in the solicitation of draft gear business from the railways in consideration of which stock was issued to them. It also denies that in co-operation with the individual defendants "it has sought to induce and compel and has induced and compelled various railway companies to purchase draft gears and other railway equipment manufactured and/or sold by this respondent in preference to draft gears and other equipment of equal or higher quality manufactured and sold by competitors" by the methods outlined in the complaint.

Separate answers were filed by the individual respondents containing similar denials, each praying "to be dismissed as to this complaint most wrongfully filed."

Safety Preaching by Radio

The widespread popularity of the Universal Safety Series, presented by the National Safety Council and the National Broadcasting Company, has resulted in the decision to undertake a third series which, starting on April 25, is to be continued through July. It will be similar to the second series which alternated safety playlets with speeches by men and women prominent in American life. The programs are presented every Friday evening at 7:15 eastern daylight saving time.

C. N. R. Capital Expenditures

Estimated capital expenditures of the Canadian National this year are divided as follows: Central region, excluding Eastern lines, \$8,062,399; Western region, \$11,218,244; subsidiary companies, \$4,468,802; Eastern lines \$4,099,800; Canadian National Railway Company, \$3,580,595.

Included in the list of proposed capital outlays in the Central Region (Ontario

and Quebec) this year are the following items: new lines to Amulet mine, St. Eustache-Oka and to International Nickel property at Sudbury, \$515,000; Spur to elevator at Kingston, \$100,000; new rails and fastenings at Kowkash, Oka, Cayuga, and Chatham, \$141,478; tie plates in various divisions, \$515,400; ballast at Alexandria, Gananoque, Oshawa, Cayuga and Chatham subdivisions, \$358,396; passenger terminals at Hamilton, \$525,000; track extensions in the Montreal district, \$353,800; grade separation on the Kingston, Brantford and at Black Rock, \$303,000; replacements at Kapuskasing and Bonaventure, \$493,000; new shop buildings at Point St. Charles, \$440,000; automatic block signals between Belleville and Brockville, \$240,000; purchase of land for the Turcot yard extension, for freight facilities at Bonaventure in Montreal and for joint facilities near Oka, \$695,000.

There is an item of \$430,000 to be expended this year on the Chatcay Laurier at Ottawa.

Of the important items in estimated outlays this year on the Western region are: \$2,500,000 on the new Vancouver hotel; \$1,000,000 on a hotel at Saskatoon; \$389,000 for additions to Jasper Park; and \$250,000 for a hotel at Prince Rupert. A large amount is also to be expended on road improvements throughout the prairie provinces. The sum of \$3,138,617 is to be expended this year on the three new steamers for the Pacific Coast service.

On the Eastern lines \$245,000 is to be spent on passenger terminal facilities at Halifax and Yarmouth, also \$635,000 on the new Halifax hotel at the depot and \$587,000 on the new hotel at Charlottetown.

Couzens Resolution Adopted by Senate

The Senate on May 21 adopted by a vote of 46 to 27 the joint resolution introduced by Senator Couzens, S. J. Res. 161, to suspend until March 4, 1931, the authority of the Interstate Commerce Commission to approve railway unifications except under conditions imposed by the resolution, and to declare unlawful "any consolidation or unification or exercise of common control" of carriers by railroad in interstate commerce by holding company or otherwise, not approved by the commission.

An amendment was adopted designed to make it clear that the resolution is not intended to prohibit acquisition of short line railroads, although officers of the American Short Line Railroad Association, in opposing the resolution, have taken the position that the principal effect upon them would be in preventing unifications of the bigger roads which would give them an opportunity to be included.

Under the terms of the resolution the commission may approve unifications which conform to three requirements, which direct the commission to prescribe conditions to protect the interests of the employees and to require the applicant to make a binding offer to acquire other roads assigned to the same system, and which also provide that it may not author-

ize an acquisition which would otherwise be in violation of the anti-trust laws.

The resolution, which was unfavorably reported from the committee on interstate commerce by a tie vote of 9 to 9, was nevertheless placed on the preferential calendar of the Senate by the Republican steering committee, and there was debate on May 16 and May 20 as to whether it should be brought up for consideration. Senator Couzens' motion to proceed to the consideration of the resolution was agreed to on May 20 by a vote of 45 to 23. Debate in opposition to the resolution was led by Senator Hawes, of Missouri, who urged the Senate to take up first his bill to give the commission power to prescribe conditions to protect employees against uncompensated injury resulting from unifications, and by Senator Fess, of Ohio. It now goes to the House, where it is understood it will not be favorably received by the leaders in the committee on interstate and foreign commerce.

Technical Librarians to Meet

Members of the commercial-technical group of the national Special Libraries Association, composed of the librarians of leading public utility, transportation, advertising and industrial libraries, have completed plans for the twenty-second annual convention of that organization, to be held in San Francisco, June 18-21. The general sessions of the convention will deal for the most part with the progress of the West, industrially and culturally, with leading western industrialists, engineers and civic figures as speakers.

Foremost in the commercial-technical group meeting will be the consideration of "tools of the trade," a discussion of the standard reference guides which have been revised and brought up to date, and a pooling of information on new reference aids published during the past year. Other subjects upon which the group will lay particular emphasis are the indexing of trade publications not indexed elsewhere, and making of bibliographies.

Plans of the group meeting are in the hands of Miss Alma C. Mitchell of the Public Service Corporation of New Jersey. She is being assisted in arrangements by Miss Mary Alexander of the advertising firm of Batten, Barton, Durstine & Osborn, Mrs. Louise Dorn of the Detroit Edison Company, Miss Marion C. Manley of the Business Branch, Newark Public Library, and Miss Josephine Greenwood of the New York Consolidated Gas Company.

Railroads Awarded Safety Plaques

Winners in the eight groups of the annual steam railroad accident prevention contest conducted by the National Safety Council, in which 183 leading Class I railroads in the United States competed, were awarded trophies at a dinner held at the Union League Club, Chicago, on May 20. In presenting the awards Lew R. Palmer of the Equitable Assurance Society, of New York, pointed to sev-

eral remarkable records made by American railroads since the contest was started in 1923. A reduction of 91,000 fatal and non-fatal accidents to employees during the last seven years was the most striking feature of the report. Robert I. Randolph, president of the Chicago Association of Commerce, also spoke.

Interstate Commerce Commission figures show that employee accidents have dropped from 150,000 in 1923 to 58,466 in 1929, and that 67 of the 183 competing steam railroads in the country have already attained a 50 per cent reduction during recent years. The actual reduction in casualties for all competing roads has been 61 per cent. The casualty rate for the year 1923 was 30.89 per million man-hours and for the year 1929 it was 13.84. This represents a reduction of 55 per cent in the casualty rate for the year 1929.

The eight winners are:

Group A, the Union Pacific System; Group B, the Union Pacific Company; Group C, the Oregon Washington Railroad & Navigation Company; Group D, the Los Angeles & Salt Lake; Group E, the Gulf Mobile & Northern; Group F, the Duluth & Iron Range; Group G, the Conemaugh & Black Lick; Group H, the Pullman Company, Chicago Central Zone.

Agreement Reached for New York Inland Freight Station

Following the decision last fall of the committee representing the presidents of the railroads entering New York City to accept the plan proposed by the Port of New York Authority for the construction and operation of a union inland freight station, formal agreement has been reached between the Port Authority and the railroads serving the port district for the building of such a station. The railroads, on May 19, officially notified the Port Authority of their acceptance of the form of contract and conditions for the use of the terminal.

This agreement, the final step in long-continued negotiations for the establishment of New York's first union inland freight station, marks the successful completion of conferences which have been under way ever since an understanding was reached some month ago on the general principles involved. (See *Railway Age*, September 14, 1929, page 652).

The draft of the contract, as approved by the railroads, fixes the site of the station in the block bounded by Eighth and Ninth avenues and West Fifteenth and West Sixteenth streets, a location determined upon after a careful study and analysis of traffic density.

John F. Galvin, chairman of the Port Authority, in announcing the agreement, said: "Union inland freight terminals are an integral part of the plan adopted by the states of New York and New Jersey in creating the Port District and which the Port Authority was authorized to effectuate. We are pleased to learn officially that every railroad in the Port District has signified its intention of signing the contract. This is a forecast of future co-operation which should be of

the greatest value to the entire Port District.

"The Port Authority is required to construct the terminal portion of the new building within fifteen months after the contract is executed and is further committed to the construction of two additional union stations, upon sites mutually satisfactory, if and when desired by the railroads.

"The studies that have been made indicate the great economies which will result from the use of inland stations. These economies will manifest themselves first in savings in the trucking charges of shippers and consignees for the deliveries and collections of less than carload freight. The opportunity to deliver outbound freight for all railroads at one station instead of several will undoubtedly reduce the wheelage cost, save time and lessen the number of trucks moving through the streets. Similar results will follow from the handling of inbound freight through the inland station. Long and cross hauls of freight to and from pier stations on Manhattan necessitated by present practice are uneconomical as trucking operations. By the routing of freight to and from inland freight stations, it will be possible to release waterfront property for the use of shipping. This is true on both the New York and the New Jersey sides of the river, and is one of the important considerations leading the Port Authority to push forward the inland terminal program. This program contemplates ultimately the development of such a number of terminals as will be sufficient to take care of Manhattan freight."

Referring to the contract, Mr. Galvin added: "The agreement is in the nature of a lease by the railroads of the main portion of the ground floor and basement of a building to be owned, erected and financed by the Port Authority. We are ready to proceed with the financing of the project. Preliminary steps have already been taken to cover the entire cost with a Port Authority bond issue and with no assistance other than our own credit."

C. N. R. Refinancing Postponed

A prediction that with any kind of luck the Canadian National would this year have sufficient operating net to pay the interest on the road's debt due the public and still show no deficit was one of the features of the various statements made last week to the House of Commons Committee on National Railways and Shipping at Ottawa by Sir Henry Thornton, president of the road. All the estimates of the road and its annual report were considered during the week and approved and later the House of Commons gave third reading to the bill voting to the road \$61,070,000 for the current year.

Last week the new Minister of Railways, Hon. Thomas Crerar, and Sir Henry both told the committee that because of the unexpectedly rapid approach of a general election the financial reorganization of the railway's financial structure, scheduled for this session of

parliament, would have to wait another year. Sir Henry told the committee that the plan was complete as far as the railway was concerned and only awaited the action of the government.

Sir Henry spoke strongly the following day regarding the present financial structure of the Canadian National in answer to some questions. "Just to put it briefly," he said, "important bankers and reputable financial and technical journals describe the present financial structure of the Canadian National as the prize joke of the financial world, which is probably about as short a description of the whole thing as you can get, but in saying that I do not mean any criticism of anyone. It simply means that due to certain exigencies in the way in which the property was acquired and in some cases the rather erratic methods of finance that were employed by previous owners the whole thing has grown into the state in which we now find it."

Sir Henry, replying to questions by various members of the Committee, showed that the total financial requirements of the Canadian National for the current calendar year would be \$162,500,000. This would be taken care of by the issue of securities to the sum of \$137,637,000, of which \$56,500,000 would be in the form of refunded securities. The total net addition to the debt of the Canadian National this year will be, it is estimated, \$81,000,000.

The main estimates for the railway system call for a vote from Parliament of \$51,600,000—for the steamship service \$12,700,000, and \$8,200,000 on account of the Maritime Freight Rates Act. Supplementary estimates for 1929-30 also were passed calling for a further sum of \$6,638,030.23, of which \$4,171,940.94 was for the Grand Trunk Western.

The two bills passed by the committee were those providing for \$20,042,038.84 to retire maturing obligations of the Canadian Northern and the Minnesota & Manitoba, and providing for power to refund \$8,609,000 of Central Vermont Railway securities. In connection with the latter measure Sir Henry said that the total investment of the Canadian National in the Central Vermont, which is now owned and controlled by the former, is \$38,860,776, in return for which the Canadian National holds \$27,000,000 in securities, and the balance is made up of \$2,500,000 in betterment following the disastrous floods in Vermont and the \$8,000,000 invested in the Southern New England lines, which Sir Henry said might later yield a considerable sum by way of salvage. This year, Sir Henry said, the Central Vermont will pay all its fixed charges and yield \$6.79 per share on its common stock.

In a statement of estimated financial requirements for the present calendar year it was shown that the net requirements would be \$15,800,000, to which must be added \$28,550,000 for general additions and betterments, \$2,000,000 for discount on securities to be issued and \$5,250,000 for proposed new equipment issue, making the total net requirements \$51,600,000, which is the sum shown in

the estimate for Parliament and which Parliament is asked to vote this session.

Reading to Electrify 10-Mile Doylestown Branch

An additional appropriation of \$300,000 has been made by the Reading for the electrification of its Doylestown branch, running about 10 miles north and east from Lansdale, Pa., according to recent announcements by President Agnew T. Dice. Contracts for the new work will be let immediately and actual construction will be begun in the near future, bringing the total cost of the company's present electrification program to \$20,300,000. The single-phase alternating current system, with power distributed through overhead trolley wires at 12,000 volts and collected by pantographs on locomotives and cars will be used on the branch, as on the rest of the electrified line. Additional work required by the new electrification includes changes to overhead bridges at certain points to provide adequate clearance for trolley wires; the provision of storage facilities for electrical equipment at Doylestown, and the erection of a power supply substation at that point to be operated in conjunction with a substation already planned at Lansdale. Power will be transmitted by the Reading from its main substation at Wayne Junction, Pa., where it will be purchased from the Philadelphia Electric Company at an ultimate expenditure of \$1,500,000 yearly.

The official statement of the company, in announcing the electrification, follows: "The Reading has decided to extend its electrification program to include the Doylestown branch, thus obviating the necessity of changing to steam trains at Lansdale. Commuters along the Doylestown branch will therefore have high-speed electric service with a maximum of convenience and a saving in running time similar to that which will be provided for the Reading Terminal-Lansdale commuters, establishing a through electric suburban service of 35 miles from Reading Terminal, Philadelphia."

"Power will be transmitted to Wayne Junction from the Conowingo hydro-generating station, on the Susquehanna river, and also from the Richmond and other Philadelphia Electric Company steam generating stations. It will be supplied by 13,200 volt cables carried to a frequency changing station at Wayne Junction, adjacent to the new electric car shop, which was recently completed. In this station the 60-cycle current will be changed to 25 cycles, the form required for train operation. The initial size of this frequency changing station will be 30,000 kilowatts, provision being made for expansion to 90,000 kilowatts, at an ultimate cost of \$4,500,000. The station will be equipped with a new outdoor type of frequency changer built by the Westinghouse Electric & Manufacturing Company."

"The Reading has practically completed the erection of the catenary supporting structures between Reading Terminal and Wayne Junction and work is proceeding on new signals between the latter point and Jenkintown, Pa. A contract covering the same type of signals between Jenkin-

town and Lansdale has been let. Construction of underground duct lines and installation of underground telephone and telegraph wires is well under way.

"Work on 70 new multiple unit cars, ordered April 1, (reported in the *Railway Age* of April 5) has been begun by the Bethlehem Steel Company. The equipment consists of 61 passenger cars, 7 combination passenger and baggage cars, and 2 passenger, baggage and mail cars. Controls and motor equipment will be built by the Westinghouse Electric & Manufacturing Company and the General Electric Company. The completed Wayne Junction electric car shop is temporarily being used as a storehouse and construction headquarters for the electrification work."

The electrification work is under the supervision of Clark Dillenbeck, chief engineer, and George I. Wright, engineer electric traction, of the Reading Company.

Air Brake Appliance Exhibit at Chicago

A total of 46 manufacturers of railway supplies and equipment were represented in the exhibit of the Air Brake Appliance Association which held its annual exhibition in connection with the thirty-seventh annual convention of the Air Brake Association, in the Hotel Stevens, Chicago, May 13 to 16 inclusive.

Following is a list of the companies exhibiting, together with a list of the products exhibited and the names of the representatives who were present at the convention:

American Hammered Piston Ring Company, Baltimore, Md.—Piston rings for air brake cylinders, triple valves, locomotive main cylinders, etc. Represented by John A. Worthington.

American Locomotive Company, New York.—Power reverse gear, power throttle and simplicity bell ringer. Represented by N. C. Naylor, Robert Brown, Arthur Haller, Hunter Michaels and W. S. Morris.

American Steel Foundries, Chicago.—Simplex clasp brake parts with hardened steel bushings and pins; model of six wheel passenger-car truck with Simplex clasp brakes, model of Hercules automatically adjustable brake head; booklets descriptive of A. S. F. roller bearing units and one-piece reversible fulcrum Ajax brake beams. Represented by A. H. Pyecke and W. C. Walsh.

Ashton Valve Company, Boston, Mass.—Air and steam gages, three-speed air recording gages, dead weight pressure gage testers, safety valves and test gages. Represented by E. C. Kenyon, Charles Gaston and J. F. Gettrust.

Barco Manufacturing Company, Chicago.—Flexible pipe joints, engine tender and steam-heat car connections, locomotive power reverse gear, Cleveland float low water alarm, lubricated plug valves and smokebox blower fitting. Represented by C. L. Mellor, W. J. Behlke, C. O. Jenista and A. S. Lewis.

Brake Equipment & Supply Company, Chicago.—Standard air-brake repair parts, reconditioned air brake levers, automatic train-control brake valve. Represented by B. Pratt, C. J. Smith, L. E. Hassman, G. F. Weinreich, J. F. Pratt and J. R. McClinton.

Buffalo Brake Beam Company, New York.—Bottom rod loop hanger, self-locking brake shoe keys, brake beams, brake beam auxiliary supports and self-locking brake pins. Represented by C. R. Busch.

Byers, A. M., Company, Pittsburgh, Pa.—Genuine wrought iron pipe. Represented by J. S. Ainsworth and F. W. Stubbs.

Corley-DeWolfe Company, Elizabeth, N. J.—Unions. Represented by Ralph A. Corley, Harold E. Corley and Chas. P. Fitzgerald.

Crane Company, Chicago.—Railroad plumbing, railroad valves and railroad fittings. Represented by J. B. Jordan, F. W. Venton, E. L. Rutherford, J. C. Cole and H. E. Bartlett.

Dearborn Chemical Company, Chicago.—No-Ox-Id rust preventive, No-Ox-Idized wrapper, feedwater treatment and cleaners. Represented by C. M. Hoffman, F. B. Horstmann, S. E. Moore and C. F. Barham.

Detroit Lubricator Company, Detroit, Mich.—Model A and B mechanical lubricators, improved

pendulum flange oilers, automatic oil reducer, hydrostatic lubricator and transfer filler. Represented by S. A. Witt, W. D. Knox, E. F. Milbank and C. E. Sperry.

Dixon, Joseph, Crucible Company, Jersey City, N. J.—Lubricants, paints, belt dressing, graphites, graphite grease and silica graphite paint. Represented by Fred Speer and E. C. Bleam.

Edna Brass Manufacturing Company, Cincinnati, Ohio.—Mechanical lubricator, flange lubricator, water columns, air manifolds, boiler checks and miscellaneous brass fittings for locomotives. Represented by F. S. Wilcoxen, William Beck and H. A. Glenn.

Ford, J. B., Company, Wyandotte, Mich.—Metal cleaners and exhibit of solutions in glass tanks showing what action is obtained from air agitation in cleaning vats. Represented by C. S. Tompkins, S. B. Crooks and H. W. Faint.

Foster Johnson Reamer Company, Elkhart, Ind.—Special tools for repairing air-brake equipment. Represented by L. G. Groessl, C. B. Whitmyer and F. M. Enos.

Garlock Packing Company, Palmyra, N. Y.—Air pump packing, asbestos cups for reverse gears, cab-cock packing and Chevron packing. Represented by H. J. Ramshaw, J. F. Franey and R. W. Chambers.

Gold Car Heating & Lighting Company, Brooklyn, N. Y.—Vapor valve, 2-in. end train valve, inlet valve, 2-in. by 2-in. pressure regulator, 2-in. by 1½-in. pressure regulator, 2-in. steam-hose couplers, Finn tubing and automatic drain valve for air pumps. Represented by R. L. Belknap, J. T. Smith and A. D. Stuver.

Grind Rite Company, Chicago.—Angle-cock grinding machine. Represented by F. W. Sasser.

Gustin-Bacon Manufacturing Company, Kansas City, Mo.—Emery brake cylinder lubricant, air-brake equipment gaskets, Flexite brake-cylinder packing cups and air-brake couplings, nipples and clamps. Represented by John W. Foyle, Fred L. Bacon, Fred C. Fuller, D. P. Morgan, Wm. E. Davis, Glenn R. Miller, A. L. Gustin, Jr., W. L. Trout and Clark Diller.

Illinois Railway Equipment Company, Chicago.—Mobile brake hanger suspension, Wright pipe clamps, X. L. A. pipe clamps, AZEE retainer valve anchor, positive brake pin lock. Represented by Braman S. Rockwell.

International Correspondence Schools, Scranton, Pa.—Educational matter on air brakes, charts and lessons. Represented by Ed. M. Sawyer and F. S. Powell.

Johns-Manville Sales Corporation, New York.—Packings, pipe coverings, high-temperature insulations, asbestos shingles, built-up roofing, waterproofing, asphalt plank, asphalt tile, corrugated transite, Banroc rock wool, brake lining, asphalt expansion joints, car insulations, car floorings and friction materials. Represented by J. C. Younglove, T. O'Leary, Jr., G. Christensen, P. E. Redding, C. E. Holland, R. J. Offutt and H. R. Poulsen.

Klasing Car Brake Company, Chicago.—Hand brakes for freight and passenger cars. Represented by A. F. Klasing and F. J. Stolpe.

Leslie Company, Lyndhurst, N. J.—New improved steam-heat reducing valves and steam-pressure regulators. Represented by J. J. Cizek and Joseph A. DeLong.

MacLean-Fogg Lock Nut Company, Chicago.—Lock nuts. Represented by J. W. Fogg and J. A. MacLean.

Miner, W. H., Inc., Chicago.—Friction draft gears, rolling rocker side bearings and safety hand brakes. Represented by Bradley S. Johnson, R. J. Miner and A. G. Peterson.

Nathan Manufacturing Company, New York.—Mechanical lubricators, low-water alarms, water columns, atomizers and globe and angle valves. Represented by Richard Welsh, J. A. Kelly and T. J. Murphy.

National Tube Company, Pittsburgh, Pa.—Scale free pipe, copper steel pipe, Shelby seamless pipe, extra strong gages for locomotive and train lines, coils and other manipulated pipe samples. Represented by P. J. Conrath, J. W. Kelly, H. R. Reddington, George Newman, H. W. Mollison, R. W. Wire, John M. Denney and W. F. Jones.

New York Air Brake Company, New York.—Brake valve pedestals; gaskets; U-12-BC valve; M-3 and F type feed valves; quick discharge dirt collectors; new type conductors; caboose valve; relay vent; A. R. A. release valve; super pump governor; single car test device, passenger and freight; hose couplings; diaphragm cocks and triple-valve ring gages. Represented by E. F. Wentworth, J. D. Cartin, Charles Campbell, Howard Yohn, L. W. Sawyer, J. L. Smith, George Kleiges, Charles Lovell and Harry Flynn.

New York & New Jersey Lubricant Company, New York.—Brake cylinder lubricant. Represented by Joseph H. Bennis and M. C. Adams.

Okite Products, Inc., New York.—Okemko cleaner used in Okite vapor cleaning of air compressors, and Okemko used in Okite air steam cleaning machine to clean locomotives at the cinder pit. Represented by H. G. Gray, L. B. Johnson, C. E. Barber and A. H. Green.

Oxweld Railroad Service Company, Chicago.—Oxweld welding and cutting equipment. Represented by G. W. Crownover and A. N. Lucas.

Pennzoil Company, Los Angeles, Cal.—Actual records and photographs of interior parts of air compressors and air brake equipment on locomotives. Represented by Percy Halladay of The Halladay Company, distributors, Richmond, Va.

Pilot Packing Company, Inc., Chicago.—Packing. Represented by Joseph Sinkler and Robert Sinkler.

Reading Iron Company, New York.—Pipe. Represented by James K. Ainer and J. G. Cottle. Simmons-Boardman Publishing Company, New York.—Copies of *Railway Age* and *Railway Mechanical Engineer*. Represented by R. F. Dusters.

Special Bolt Machinery Corporation, New York.—Semi-automatic machines for refinishing air-brake valves. Represented by H. L. Kenah. Sunbeam Electric Manufacturing Company, Evansville, Ind.—George drain and relief valves, drain valves, automatic cylinder cocks, automatic exhaust channel diameters, R4-800W-32U Sunbeam turbo generator, Rustproof headlight with visor and rustproof chromium trimmed headlight. Represented by J. Henry Schroeder, R. H. George and E. E. Kinnaw.

Superior Flake Graphite Company, Chicago.—Superflake brake cylinder lubricant, Superflake triple valve graphite and Superflake pipe-joint compound. Represented by Walter R. Pfasterer.

Superior Railway Equipment Company, Chicago.—Hand brakes. Represented by E. W. Richey, James A. Galligan, F. L. Ingraham, B. J. Parks and H. C. Smith.

Swanson Company, Chicago.—Locomotive gage holders. Represented by O. W. Swanson.

Universal Draft Gear Attachment Company, Chicago.—Power hand brakes for passenger and freight cars and brake adjusters for freight cars. Represented by C. C. Kinsman, C. Carmichael and P. B. Camp.

Vapor Car Heating Company, Inc., Chicago.—Locomotive steam-heat equipment including stop valves, steam pressure reducing valves and metallic steam joints, etc. Car-heating equipment including Vapor system of car heating, Thermos-tatic unit heat control and Fin type radiation. Represented by L. H. Gillick, E. E. Smith, J. J. Keane, L. B. Rhodes, N. F. Burns and E. C. Post.

Westinghouse Air Brake Company, Wilmerding, Pa.—Brake cylinder protector, A. R. A. reservoir release valve, caboose conductors valve (form A-1 and A-2), super-steam valve, electrotite hose couplings, single cast rings for steam-driven air compressor, packing cups, gaskets, pneumatic horns, H. U. Pedestal brake valves, reservoir treated with No-Ox-Id, cylinder cap for Universal valve having air strainer and by-pass check valves, literature covering all air brake equipment. Represented by C. H. Beck, C. C. Farmer, J. B. Wright, C. D. Foltz, A. K. Hohmyer, J. S. Y. Fralich, E. Davis, F. Guilloy, E. H. Weaver, S. L. Williams, H. A. Maylock, R. P. Ives, W. M. Sleet, A. H. Huston, C. J. Werlich, V. B. Enrick, H. L. Fuller, T. G. Myles, R. J. Knapp, L. Wilcox, H. H. Burns, F. B. Johnson, J. Hume, A. C. Layton, R. K. Whittlesey, G. L. Cotter, R. I. Cunningham, H. J. Robinson, E. R. Fitch, F. B. Thomas, P. E. Yancey, J. R. Holton, F. W. Pennington, L. M. Carlton, P. H. Donavon and G. C. Farmer.

Exhibitors at June Conventions

The firms listed below have definitely signified their intention of presenting exhibits, under the direction of the Railway Supply Manufacturers' Association, at the Atlantic City conventions of Division V—Mechanical, Division VI—Purchases and Stores, and the Motor Transport Division of the American Railway Association. Exhibits will be presented on both floors of the new exhibition hall, while track exhibits will be located on the Pennsylvania and Reading tracks. Division V will meet June 18-25, Division VI, June 18-20, and the Motor Transport division, June 18-20. It is probable that other railway supply firms will be added to the list of exhibitors before the opening of the convention.

Adams & Westlake Co., Elkhart, Ind.—Air Reduction Sales Co., New York.

Ajax Hand Brake Co., Chicago.

Alemite Corp., Chicago.

Allegheny Steel Co., Brackenridge, Pa.

Aluminum Co. of America, Pittsburgh, Pa.

American Arch Co., Inc., New York.

American Brake Materials Corp., Detroit, Mich.

American Brake Shoe & Foundry Co., New York.

(Continued on page 1258)

Operating Statistics of Large Steam Railways—Selected Items for March, 1930, Comp

Region, road and year	Average miles of road operated	Train-miles	Locomotive-miles		Car-miles		Ton-miles (thousands)			Average number of locomotives on line			
			Principal and helper	Light	Loaded (thousands)	Per cent loaded	Gross	Excluding locomotives and tenders	Net Revenue and non-revenue	Servicable	Unserviceable	Per cent unserviceable	Stored
New England Region:													
Boston & Albany.....	1930 407	186,235	198,569	20,715	4,650	65.5	241,951	83,689	100	23	18.4	37	
	1929 407	206,917	218,674	20,445	5,387	67.9	272,288	98,944	101	23	18.7	27	
Boston & Maine.....	1930 2,066	368,628	423,651	52,189	12,517	70.7	641,296	236,608	253	58	18.6	71	
	1929 2,070	398,348	472,322	54,691	13,403	71.6	661,803	246,811	285	37	11.4	73	
N. Y., New H. & Hart.....	1930 2,107	439,310	511,535	28,620	15,119	63.6	819,737	298,951	283	64	18.5	48	
	1929 2,102	524,714	587,758	35,942	16,732	69.3	860,852	337,102	278	87	23.9	16	
Great Lakes Region:													
Delaware & Hudson.....	1930 875	298,247	397,052	46,125	9,636	64.1	577,619	263,146	240	29	10.8	102	
	1929 875	321,047	425,697	45,427	10,257	65.2	602,061	277,965	236	33	12.2	82	
Del. Lack. & Western.....	1930 998	461,204	507,478	56,872	16,069	67.9	891,853	359,181	240	56	19.0	43	
	1929 998	533,246	614,349	69,380	18,323	68.7	985,669	391,708	243	49	16.8	16	
Erie (inc. Chi. & Erie).....	1930 2,316	821,624	879,225	57,832	35,440	61.8	2,112,343	817,789	397	98	19.8	93	
	1929 2,316	916,697	992,431	75,371	41,700	64.0	2,439,637	996,204	391	106	21.4	23	
Grand Trunk Western.....	1930 1,020	299,131	302,195	2,801	8,998	67.6	481,552	177,333	90	33	27.0	29	
	1929 992	387,148	390,413	3,381	12,202	64.7	658,850	232,162	115	23	16.5	2	
Lehigh Valley	1930 1,343	497,830	539,193	60,304	15,387	64.0	898,550	363,761	253	90	26.2	25	
Michigan Central	1930 1,865	514,631	515,781	14,208	17,599	60.3	987,195	328,754	185	41	18.1	38	
	1929 1,822	640,472	653,358	19,606	24,232	62.1	1,304,692	431,046	195	41	17.5	18	
New York Central.....	1930 6,468	1,952,998	2,148,024	158,454	74,792	61.3	4,501,866	1,854,074	1,029	319	23.7	316	
	1929 6,467	2,152,063	2,416,626	186,330	85,517	61.1	5,103,776	2,072,841	930	382	29.1	116	
New York, Chi. & St. L.	1930 1,665	655,568	663,843	7,420	20,920	61.7	1,209,320	448,707	201	54	21.2	30	
	1929 1,665	700,509	709,400	7,128	23,688	63.5	1,325,980	502,268	212	62	22.6	30	
Pere Marquette	1930 2,177	414,208	419,385	3,727	10,479	62.9	613,701	242,098	173	28	13.9	27	
	1929 2,178	477,459	482,396	5,744	12,622	61.4	764,600	325,013	179	32	15.1	14	
Pitts. & Lake Erie.....	1930 231	119,127	122,953	1,355	4,236	60.6	333,996	185,626	49	16	24.8	14	
	1929 231	130,210	132,623	1,930	4,727	60.8	363,844	201,064	52	13	19.7	10	
Wabash	1930 2,497	811,826	858,939	13,718	24,758	62.9	1,420,020	491,334	307	70	18.5	38	
	1929 2,497	929,543	968,186	12,358	28,091	63.2	1,601,277	577,019	282	74	20.9	5	
Central Eastern Region:													
Baltimore & Ohio.....	1930 5,541	1,723,966	1,998,298	238,713	52,992	61.5	3,482,557	1,560,164	988	219	18.1	170	
	1929 5,536	2,018,137	2,229,025	282,076	60,292	61.6	3,964,426	1,821,308	1,010	214	17.5	107	
Central of New Jersey.....	1930 693	251,082	271,406	42,349	7,329	58.1	486,303	219,110	167	31	15.7	19	
	1929 691	262,223	281,964	47,903	7,590	59.2	494,828	224,160	178	31	15.0	25	
Chicago & Eastern Ill.	1930 946	219,914	221,234	2,626	5,925	65.0	359,337	157,223	98	47	32.3	33	
	1929 946	257,603	258,269	3,021	7,014	64.3	420,720	181,824	90	71	44.0	18	
Big Four Lines	1930 2,712	744,142	770,597	19,710	22,818	61.4	1,438,840	636,935	323	138	29.9	28	
	1929 2,718	844,018	874,508	22,650	26,367	60.3	1,704,333	761,096	356	130	26.7	26	
Elgin, Joliet & Eastern ..	1930 453	131,262	139,346	7,336	3,630	62.8	273,483	140,314	77	14	15.6	4	
	1929 453	153,055	163,535	8,664	4,491	62.3	337,293	172,883	78	9	10.7	..	
Long Island	1930 400	46,530	51,215	12,753	621	54.1	42,693	16,031	45	11	19.4	2	
	1929 400	48,029	52,457	16,778	686	54.8	44,630	15,868	53	8	13.8	..	
Pennsylvania System.....	1930 10,690	3,684,716	4,234,686	421,015	129,948	62.7	8,486,550	3,770,327	2,368	365	13.4	613	
	1929 10,738	4,057,183	4,704,555	457,448	145,531	63.3	9,574,238	4,386,674	2,686	321	10.7	607	
Reading	1930 1,454	619,649	672,562	56,677	16,898	59.1	1,192,151	574,198	327	61	15.6	49	
	1929 1,452	656,159	725,023	53,911	18,188	60.6	1,230,322	595,282	336	74	18.0	38	
Pocahontas Region:													
Chesapeake & Ohio.....	1930 2,740	958,234	1,009,148	36,320	33,011	57.4	2,604,590	1,385,488	518	88	14.5	113	
	1929 2,730	1,118,427	1,201,299	55,710	36,878	54.7	2,985,543	1,565,856	532	93	14.9	52	
No Norfolk & Western.....	1930 2,230	768,648	878,153	51,377	24,306	50.7	2,289,217	1,191,382	444	47	9.6	116	
	1929 2,230	829,428	954,687	40,003	31,000	59.4	2,528,137	1,339,051	480	53	10.0	107	
Southern Region:													
Atlantic Coast Line.....	1930 5,155	730,942	733,191	10,792	19,057	58.6	1,080,336	371,963	402	52	11.5	87	
	1929 5,153	817,596	825,259	11,475	22,402	61.4	1,207,124	429,748	404	83	17.0	69	
Central of Georgia.....	1930 1,900	267,301	268,975	4,756	6,827	68.9	371,037	150,311	124	28	18.7	5	
	1929 1,898	290,392	292,905	5,118	7,760	74.0	405,674	172,094	132	20	13.0	5	
Ill. Cent. (inc. Y. & M. V.).....	1930 6,694	1,794,311	1,807,183	30,991	48,537	61.9	3,131,373	1,263,878	712	126	15.1	22	
	1929 6,710	2,029,920	2,051,428	30,663	55,433	62.1	3,552,883	1,465,674	732	109	13.0	15	
Louisville & Nashville.....	1930 5,247	1,451,896	1,522,370	43,323	30,627	60.2	2,056,114	954,575	559	131	19.0	66	
	1929 5,247	1,585,943	1,679,465	56,741	33,627	60.8	2,246,931	1,062,216	620	96	13.4	25	
Seaboard Air Line.....	1930 4,491	623,411	647,448	8,256	15,985	62.3	933,887	345,693	268	25	8.5	..	
	1929 4,475	672,429	696,203	11,770	17,956	62.5	1,033,780	370,532	255	48	15.9	..	
Southern	1930 6,676	1,402,489	1,431,760	29,043	34,767	63.5	1,975,224	766,345	797	154	16.2	143	
	1929 6,679	1,557,700	1,593,036	35,449	39,235	66.3	2,149,607	877,150	839	122	12.7	98	
Northwestern Region:													
Chi. & North Western.....	1930 8,459	1,239,312	1,305,190	25,169	32,936	65.3	1,856,015	742,418	760	95	11.1	137	
	1929 8,467	1,456,168	1,537,597	24,600	35,953	62.7	2,107,947	826,919	755	104	12.1	85	
Chi., Milw., St. P. & Pac.	1930 11,244	1,512,238	1,620,070	83,173	43,822	63.9	2,569,063	1,032,358	809	149	15.5	273	
	1929 11,248	1,708,059	1,843,755	106,162	50,405	63.3	2,957,061	1,214,381	799	147	15.6	162	
Chi., St. P., Minn. & Om.	1930 1,724	292,751	316,796	13,647	6,2								

ared with March, 1929, for Roads with Annual Operating Revenues above \$25,000,000.

Region, road and year	Average number of freight cars on line			Gross ton- miles per cent hour, ex- cluding un- serv- ice- able locomo- tives and tenders		Gross ton-miles per train-mile, ex- cluding locomotives and tenders		Net ton- miles per train- mile		Net ton- miles per car- mile		Net ton- miles per car- day		Pounds of coal per 1,000 gross ton-miles	Loco- motive miles per road including locomotives and tenders	Loco- motive miles per day
	Home	Foreign	Total	Per train- hour	ex- cluding locomo- tives and tenders	Per train- hour	ex- cluding locomo- tives and tenders	Net ton- miles per train- mile	Net ton- miles per train- mile	Net ton- miles per car- mile	Net ton- miles per car- day	Net ton- miles per car- day	Net ton- miles per car- day	Net ton- miles per car- day	Net ton- miles per car- day	Net ton- miles per car- day
New England Region:																
Boston & Albany.....1930	4,278	3,789	8,067	4.8	19,561	1,299	449	18.0	335	28.4	6,631	167	57.5			
1929	2,891	4,885	7,776	3.9	19,076	1,316	478	18.4	410	32.9	7,840	171	62.3			
Boston & Maine.....1930	10,887	9,457	20,344	4.1	22,758	1,740	642	18.9	375	28.1	3,694	112	49.3			
1929	9,978	10,391	20,369	3.5	20,993	1,661	620	18.4	391	29.6	3,847	120	53.0			
N. Y., New H. & Hart.....1930	16,569	13,046	29,615	11.2	24,626	1,866	681	19.8	326	25.9	4,577	113	50.2			
1929	15,010	16,450	31,460	11.4	21,917	1,641	642	20.1	346	24.7	5,174	118	55.2			
Great Lakes Region:																
Delaware & Hudson.....1930	11,114	5,009	16,123	3.4	25,184	1,937	882	27.3	526	30.1	9,701	140	53.1			
1929	10,275	5,836	16,111	3.7	23,766	1,875	866	27.1	557	31.5	10,248	152	56.6			
Del., Lack. & Western.....1930	19,446	6,543	25,989	4.5	25,615	1,934	779	22.4	446	29.4	11,608	145	61.5			
1929	16,953	8,181	25,134	4.7	24,141	1,848	735	21.4	503	34.2	12,659	143	75.5			
Erie (inc. Chi. & Erie).....1930	35,447	16,354	51,801	3.4	35,829	2,571	995	23.1	509	35.7	11,391	115	61.1			
1929	29,611	20,199	49,810	4.5	33,958	2,661	1,087	23.9	645	42.2	13,871	117	69.3			
Grand Trunk Western.....1930	3,729	10,331	14,060	7.0	24,862	1,610	593	19.7	407	30.5	5,610	111	79.6			
1929	2,335	16,797	19,132	5.2	22,467	1,702	600	19.0	391	31.8	7,553	109	92.1			
Lehigh Valley.....1930	20,050	7,374	27,424	6.2	27,658	1,805	731	23.6	428	28.3	8,738	154	56.4			
1929	20,905	8,531	29,436	9.8	26,052	1,847	767	23.4	459	29.5	10,064	153	52.9			
Michigan Central.....1930	24,678	13,055	37,733	4.2	34,013	1,918	639	18.7	281	25.0	5,685	118	75.6			
1929	17,196	18,987	36,183	5.4	32,662	2,037	673	17.8	384	34.8	7,632	113	92.0			
New York Central.....1930	77,346	59,102	136,448	4.2	32,420	2,305	949	24.8	438	28.8	9,247	110	55.2			
1929	67,873	69,448	137,321	5.2	32,092	2,372	963	24.2	487	32.9	10,340	113	64.0			
New York, Chi. & St. L.1930	14,940	9,533	24,473	7.7	28,060	1,845	684	21.4	591	44.7	8,695	107	84.7			
1929	13,088	11,183	24,271	6.8	24,842	1,893	717	21.2	668	49.5	9,733	108	84.5			
Pere Marquette.....1930	9,863	6,941	16,804	4.1	22,081	1,482	584	23.1	465	32.0	3,587	108	68.0			
1929	9,176	9,147	18,323	3.6	21,261	1,601	681	25.7	572	36.2	4,814	105	74.7			
Pitts. & Lake Erie.....1930	16,693	5,672	22,365	4.1	36,942	2,804	1,558	43.8	268	10.1	25,898	114	62.1			
1929	13,422	8,696	22,118	10.7	32,287	2,794	1,544	42.5	293	11.3	28,045	108	67.7			
Wabash.....1930	17,870	11,980	29,850	2.3	29,119	1,749	605	19.8	531	42.5	6,348	123	74.8			
1929	14,505	15,652	30,157	2.2	27,625	1,723	621	20.5	617	47.5	7,456	129	88.8			
Central Eastern Region:																
Baltimore & Ohio.....1930	77,107	24,605	101,712	5.4	24,512	2,020	905	29.4	495	27.3	9,083	153	59.8			
1929	71,018	29,856	100,874	6.4	22,823	1,964	902	30.2	582	31.3	10,612	154	68.0			
Central of New Jersey.....1930	18,001	9,975	27,976	5.5	24,354	1,937	873	29.9	253	14.5	10,203	153	51.1			
1929	18,028	10,708	28,736	6.4	22,365	1,887	855	29.5	252	14.4	10,471	160	50.9			
Chicago & Eastern Ill.1930	12,912	3,582	16,494	41.8	25,443	1,634	715	26.5	307	17.8	5,360	135	49.9			
1929	12,809	4,195	17,004	38.6	24,880	1,633	706	25.9	345	20.7	6,199	141	52.3			
Big Four Lines a.....1930	26,752	19,869	46,621	4.4	28,509	1,934	856	27.9	441	25.7	7,577	129	55.4			
1929	21,047	23,301	44,348	4.9	27,306	2,019	902	28.9	554	31.8	9,034	121	59.6			
Elgin, Joliet & Eastern.....1930	9,701	7,342	17,043	4.6	15,161	2,083	1,069	38.7	266	10.9	9,995	133	52.0			
1929	9,117	8,642	17,759	5.7	14,894	2,204	1,130	38.5	314	13.1	12,305	139	63.8			
Long Island.....1930	725	4,578	5,303	1.3	6,627	918	345	25.8	98	7.0	1,292	314	37.0			
1929	1,481	4,101	5,582	2.1	6,420	929	330	23.1	92	7.2	1,279	355	36.6			
Pennsylvania System.....1930	226,383	67,407	293,790	3.3	29,187	2,303	1,023	29.0	414	22.7	11,378	131	54.9			
1929	214,333	81,097	295,430	5.6	28,317	2,360	1,081	30.1	479	25.1	13,178	130	55.4			
Reading.....1930	32,074	12,210	44,284	4.5	22,462	1,924	927	34.0	418	20.8	12,739	145	60.8			
1929	29,306	13,618	42,924	3.4	21,401	1,875	907	32.7	447	22.6	13,224	151	61.3			
Pocahontas Region:																
Chesapeake & Ohio.....1930	34,980	8,670	43,650	2.0	35,754	2,718	1,446	42.0	1,024	42.5	16,310	91	55.7			
1929	31,957	10,671	42,628	2.7	33,775	2,669	1,400	42.5	1,185	51.0	18,500	95	64.8			
Norfolk & Western.....1930	36,445	7,689	44,134	.9	41,489	2,978	1,550	49.0	871	35.0	17,234	129	61.0			
1929	30,274	8,627	38,901	1.0	42,045	3,048	1,614	43.2	1,110	43.3	19,369	131	60.2			
Southern Region:																
Atlantic Coast Line.....1930	24,487	10,025	34,512	4.9	21,470	1,478	509	19.5	348	30.4	2,328	111	52.8			
1929	21,834	12,427	34,261	4.8	20,569	1,476	526	19.2	405	34.3	2,690	114	55.4			
Central of Georgia.....1930	5,762	4,698	10,460	5.7	19,918	1,388	562	22.0	464	30.6	2,552	129	58.1			
1929	4,509	6,085	10,594	4.9	18,396	1,397	593	22.2	524	32.0	2,925	139	63.2			
Ill. Cent. (inc. Y. & M. V.).....1930	45,547	18,859	64,406	4.5	24,999	1,745	704	26.0	633	39.3	6,090	139	70.7			

News of the Week

(Continued from page 1255)

American Car & Foundry Co., New York.
 American Locomotive Co., New York.
 American Rolling Mill Co., Middletown, Ohio.
 American Steel Foundries, Chicago.
 American Throttle Co., Inc., New York.
 Anchor Packing Co., Philadelphia, Pa.
 Arco Manufacturing Co., Hoboken, N. J.
 Ashton Valve Co., Cambridge, Mass.
 Atkins, E. C., & Co., Inc., Indianapolis, Ind.
 Automatic Transportation Co., Inc., Buffalo, N. Y.
 Baker-Raulang Co., Cleveland, Ohio.
 Baldwin Locomotive Works, Philadelphia, Pa.
 Barco Manufacturing Co., Chicago.
 Barrett-Cravens Co., Chicago.
 Bauer & Black, Chicago.
 Bendix-Westinghouse Automotive Air Brake Co., Pittsburgh, Pa.
 Berry Iron & Steel Co., St. Joseph, Mo.
 Bethlehem Steel Corp., Bethlehem, Pa.
 Bettendorf Co., Bettendorf, Iowa.
 Bird-Archer Co., New York.
 Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
 Bosch, Robert, Magneto Co., Inc., Long Island City, N. Y.
 Bradford Corp., New York.
 Bradley, C. C. & Son, Inc., Syracuse, N. Y.
 Brewster, Morris B., Inc., Chicago.
 Briggs & Stratton Corp., Milwaukee, Wis.
 Brill, The J. G., Co., Philadelphia, Pa.
 Buckeye Portable Tool Co., Dayton, Ohio.
 Buckeye Steel Casting Co., Columbus, Ohio.
 Buda Co., Harvey, Ill.
 Buffalo Brake Beam Co., New York.
 Byers, A. M., Co., Pittsburgh, Pa.
 Camden Forge Co., Camden, N. J.
 Camel Co., Chicago.
 Cardwell Westinghouse Co., Chicago.
 Carnegie Steel Co., Pittsburgh, Pa.
 Central Alloy Steel Corp., Massillon, Ohio.
 Celotex Co., Chicago.
 Chase, L. C., & Co., Boston, Mass.
 Chicago-Cleveland Car Roofing Co., Chicago.
 Chicago Pneumatic Tool Co., New York.
 Chicago Railway Equipment Co., Chicago.
 Clark Manufacturing Co., Philadelphia, Pa.
 Clark Tractor Co., Battle Creek, Mich.
 Cleveland Tanning Co., Cleveland, Ohio.
 Coffin, The J. S., Jr., Co., Englewood, N. J.
 Consolidated Ashcroft Hancock Co., Inc., New York.
 Consolidated Machine Tool Corp. of America, Rochester, N. Y.
 Coppers Locomotive Equipment Co., Worcester, Mass.
 Corley-DeWolfe Co., Elizabeth, N. J.
 Crane Co., Chicago.
 Crosby Steam Gage & Valve Co., New York.
 Davis Brake Beam Co., Johnstown, Pa.
 Dayton Pneumatic Tool Co., Dayton, Ohio.
 Dearborn Chemical Co., Chicago.
 Delaware & Hudson Co., Albany, N. Y.
 Delta File Works, Philadelphia, Pa.
 Detroit Lubricator Co., Detroit, Mich.
 DeVilbiss Co., Toledo, Ohio.
 Diehl Manufacturing Co., Elizabethport, N. J.
 Dixon, Joseph, Crucible Co., Jersey City, N. J.
 Dri-Steam Valve Sales Corp., New York.
 Dromgold & Glenn, Chicago.
 Duff-Norton Manufacturing Co., Pittsburgh, Pa.
 Durametallic Corp., Kalamazoo, Mich.
 Ebinger, The D. A., Sanitary Mfg. Co., Columbus, Ohio.
 Economy Engineering Co., Chicago.
 Economy Metal Products Corp., New York.
 Economy Railway Appliance Co., Ltd., Montreal, Can.
 Edgewater Steel Co., Pittsburgh, Pa.
 Edison Storage Battery Co., Orange, N. J.
 Edna Brass Manufacturing Co., Cincinnati, Ohio.
 Edison Manufacturing Corp., South Boston, Mass.
 Edwards, The O. M., Co., Inc., Syracuse, N. Y.
 Electric Arc Cutting & Welding Co., Newark, N. J.
 Electric Service Supplies Co., Philadelphia, Pa.
 The Electric Storage Battery Co., Philadelphia, Pa.
 Electro Chemical Engineering Corp., Chicago.
 Electro-Motive Co., Cleveland, Ohio.
 Elliott Co., Jeannette, Pa.
 Elwell-Parker Electric Co., New York.
 Enterprise Railway Equipment Co., Chicago.
 Equipment Specialties Co., Chicago.
 Everlasting Valve Co., Jersey City, N. J.
 Ewald Iron Co., Louisville, Ky.
 Falls Hollow Staybolt Co., Cuyahoga Falls, Ohio.
 Firebar Corp., Cleveland, Ohio.
 Flannery Bolt Co., Pittsburgh, Pa.
 Flexible Truck Corp., Reading, Pa.
 Ford, The J. B. Sales Co., Wyandotte, Mich.
 Fort Pitt Malleable Iron Co., Pittsburgh, Pa.
 Franklin Railway Supply Co., Inc., New York.
 Frost Railway Supply Co., Detroit, Mich.
 Galena Oil Corp., New York.
 Garlock Packing Co., Palmyra, N. Y.

General American Car Co., Chicago.
 General Cable Corp., Rome, N. Y.
 General Electric Co., Schenectady, N. Y.
 General Steel Castings Corp., Granite City, Ill.
 Giesse, Henry Co., Chicago.
 Gilg, Henry F., Pittsburgh, Pa.
 Globe Steel Tubes Co., Milwaukee, Wis.
 Gold Car Heating Co., Brooklyn, N. Y.
 Goodrich, The B. F., Rubber Co., Akron, Ohio.
 Goodyear Tire & Rubber Co., Inc., Akron, Ohio.
 Goude Coupler Co., Rochester, N. Y.
 Graham-White Sander Corp., Roanoke, Va.
 Graphol Products Co., Inc., Brooklyn, N. Y.
 Griffin Wheel Co., Chicago.
 Grip Nut Co., Chicago.
 Hagy, J. Milton, Waste Works, Philadelphia, Pa.
 Hale & Kilburn Co., Philadelphia, Pa.
 Hanlon Drilling Valve Co., Boston, Mass.
 Hanlon Locomotive Sander Co., Winchester, Mass.
 Hanna Stoker Co., Cincinnati, Ohio.
 Hennessy Lubricator Co., New York.
 Heywood-Wakefield Co., Boston, Mass.
 Hollup Corp., Chicago.
 Hulson Grate Co., Inc., Keokuk, Iowa.
 Hunt-Spiller Manufacturing Corp., South Boston, Mass.
 Hutchins Car Roofing Co., Detroit, Mich.
 Hutto Engineering Co., Inc., Detroit, Mich.
 Hyatt Roller Bearing Co., Newark, N. J.
 Hynson, Westcott & Dunning, Philadelphia, Pa.
 Illinois Steel Co., Chicago.
 Independent Pneumatic Tool Co., Chicago.
 Industrial Brownhoist Corp., Cleveland, Ohio.
 Ingersoll-Rand Co., New York.
 International Nickel Co., Inc., New York.
 Irving Iron Works Co., Long Island City, N. Y.
 Johns-Manville Corp., New York.
 Johnston Manufacturing Co., Minneapolis, Minn.
 Jones & Laughlin Steel Corp., Pittsburgh, Pa.
 Joyce-Cridland Co., Dayton, Ohio.
 Keller, William H., Inc., Grand Haven, Mich.
 Kerite Insulated Wire & Cable Co., New York.
 Key-Bolt Appliance Co., Elmira, N. Y.
 Keystone Railway Equipment Co., Chicago.
 Klasing Car Brake Co., Chicago.
 Landis Machine Co., Waynesboro, Pa.
 Leavitt Machine Co., Orange, Mass.
 Lebanon Steel Foundry, Lebanon, Pa.
 Lehman Company, Chicago.
 Lewis-Shepard Co., Boston, Mass.
 Libbey Glass Manufacturing Co., Toledo, Ohio.
 Lima Locomotive Works, Inc., New York.
 Locomotive Finished Material Co., Atchison, Kan.
 Locomotive Firebox Co., Chicago.
 Logan Drinking Cup Co., Division, Worcester, Mass.
 Long, Charles R., Jr., Co., Louisville, Ky.
 Lower Stoker Co., Pittsburgh, Pa.
 Lukens Steel Co., Coatesville, Pa.
 Lunkheimer Co., Cincinnati, Ohio.
 Mack-International Motor Truck Corp., New York.
 MacLean-Fogg Lock Nut Co., Chicago.
 MacRae's Blue Book Co., Chicago.
 Magnus Co., Inc., Chicago.
 Manganese Steel Forge Co., Philadelphia, Pa.
 Manning, Maxwell & Moore, Inc., New York.
 Mason Regulator Co., Boston, Mass.
 Massachusetts Mohair Plush Co., Boston, Mass.
 Mercedes Benz Co., Inc., New York.
 Messinger Bearing, Inc., Philadelphia, Pa.
 Metal & Thermit Corp., New York.
 Micro Machine Co., Bettendorf, Iowa.
 Midgley & Borrowdale, Chicago.
 Midland Co., So., Milwaukee, Wis.
 Midvale Co., Philadelphia, Pa.
 Milar, Clinch & Co., Chicago.
 Miner, W. H., Inc., Chicago.
 Morton Manufacturing Co., Muskegon Hgts., Mich.
 Murdock Manufacturing & Supply Co., Cincinnati, Ohio.
 McConway & Torley Co., Pittsburgh, Pa.
 Nathan Manufacturing Co., New York.
 National Aluminate Corp., Chicago.
 National Bearing Metals Corp., St. Louis, Mo.
 National Boiler Washing Co. of Illinois, Chicago.
 National Brake Co., New York.
 National Lock Washer Co., Newark, N. J.
 National Malleable & Steel Casting Co., Cleveland, Ohio.
 National Railway Devices Co., Chicago.
 National Tube Co., Pittsburgh, Pa.
 New York Air Brake Co., New York.
 Niles Tool Works Co., Hamilton, Ohio.
 Oakite Products, Inc., New York.
 Ohio Brass Co., Mansfield, Ohio.
 Ohio Injector Co., Chicago.
 Ohmer Fare Register Co., Dayton, Ohio.
 Okades Co., Chicago.
 Okonite Co., New York.
 Oxweld Railroad Service Co., Chicago.
 Paige & Jones Chemical Co., Inc., New York.
 Paint Products Corp., Philadelphia, Pa.
 Pantasote Co., New York.
 Parker Appliance Co., Cleveland, Ohio.
 Paulus, Joseph C. & Co., Philadelphia, Pa.
 Paxton-Mitchell Co., Omaha, Neb.
 Pels, Henry, & Co., Inc., New York.

Penn Iron & Steel Co., Creighton, Pa.
 Permutit Co., New York.
 Pilliard Co., New York.
 Pilot Packing Co., Inc., Chicago.
 Pittsburgh Plate Glass Co., Newark, N. J.
 Pittsburgh Steel Foundry Corp., Glassport, Pa.
 Pocket List of Railroad Officials, New York.
 Powell Pressed Steel Co., Hubbard, Ohio.
 Pratt & Letchworth Co., Buffalo, N. Y.
 Pratt & Whitney Co., Hartford, Conn.
 Pressed Steel Car Co., New York.
 Production Machine Co., Greenfield, Mass.
 Pyle-National Co., Chicago.
 Pyrene Manufacturing Co., Newark, N. J.
 Q & C Co., New York.
 Quigley Furnace Specialties Co., Inc., New York.
 Railroad Herald, Atlanta, Ga.
 Railway Device Co., St. Louis, Mo.
 Railway Purchases & Stores, Chicago.
 Railway Service & Supply Corp., Indianapolis, Ind.
 Railway Steel-Spring Co., New York.
 Reading Iron Co., Reading, Pa.
 Rees Manufacturing Corp., Pittsburgh, Pa.
 Reliance Machine & Stamping Works, Inc., New Orleans, La.
 Roberts Automatic Connector Co., Ltd., Sarnia, Ont., Can.
 Rock Island Manufacturing Co., Chicago.
 Roebling, John A., Sons Co., Trenton, N. J.
 Royal Railway Supply Co., Inc., New York.
 Ryerson, Joseph T. & Son, Inc., Chicago.
 S. K. L. Industries, Inc., New York.
 Safety Car Heating & Lighting Co., New York.
 Safety Equipment Service Co., Cleveland, Ohio.
 Safety Grinding Wheel & Machine Co., Springfield, Ohio.
 St. Louis Car Co., St. Louis, Mo.
 Sargent Co., Chicago.
 Savage, W. J. Co., Knoxville, Tenn.
 Schaefer Equipment Co., Pittsburgh, Pa.
 Sculini Steel Co., New York.
 Scully Steel & Iron Co., Chicago.
 Sellers, William & Co., Inc., Philadelphia, Pa.
 Shaffer Bearing Corp., Chicago.
 Shell Petroleum Corp., St. Louis, Mo.
 Sherwin-Williams Co., Cleveland, Ohio.
 Simmons-Boardman Publishing Co., New York.
 Southern Wheel Co., New York.
 Special Bolt Machinery Corp., New York.
 Spring Packing Corp., Chicago.
 Standard Auto-Tite Joints Co., Pittsburgh, Pa.
 Standard Car Truck Co., Chicago.
 Standard Coupler Co., New York.
 Standard Oil Co. of Louisiana, New Orleans, La.
 Standard Oil Co. of New Jersey, New York.
 Standard Railway Equipment Co., New York.
 Standard Steel Works Co., Philadelphia, Pa.
 Standard Stoker Co., Inc., Chicago.
 Stanley Electric Tool Co., New Britain, Conn.
 Starrett, The L. S. Co., Athol, Mass.
 Stucki, A. Co., Pittsburgh, Pa.
 Sunbeam Electric Manufacturing Co., Evansville, Ind.
 Superheater Co., New York.
 Superior Railway Equipment Co., Chicago.
 Symington Co., Rochester, N. Y.
 T-Z Railway Equipment Co., Chicago.
 Textileather Corp., Newark, N. J.
 Timken Roller Bearing Co., Canton, Ohio.
 Tolhurst Machine Works, Inc., Troy, N. Y.
 Transportation Publishing Co., Inc., Los Angeles, Cal.
 Tuco Products Corp., New York.
 U.S. Battery Corp., Niagara Falls, N. Y.
 Ulster Iron Works, New York.
 Underwood, H. B., Corp., Philadelphia, Pa.
 Union Asbestos & Rubber Co., Chicago.
 Union Metal Products Co., New York.
 Union Railway Equipment Co., Chicago.
 Union Spring & Manufacturing Co., Pittsburgh, Pa.
 United Machine Tool Corp., New York.
 Universal Draft Gear Attachment Co., Chicago.
 Universal Packing Corp., Pittsburgh, Pa.
 Valve Pilot Corp., New York.
 Vanadium Corp. of America, New York.
 Vapor Car Heating Co., Chicago.
 Viloco Railway Equipment Co., Chicago.
 Walworth Co., Boston, Mass.
 Watson-Stillman Co., New York.
 Waugh Equipment Co., New York.
 West Disinfecting Co., Chicago.
 Western Railway Equipment Co., St. Louis, Mo.
 Westinghouse Air Brake Co., Wilmerding, Pa.
 Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.
 Wheel Truing Brake Shoe Co., Detroit, Mich.
 White Co., Cleveland, Ohio.
 Whiting Corp., Harvey, Ill.
 Willson Products, Inc., Reading, Pa.
 Wilson-Imperial Co., Newark, N. J.
 Wine Railway Appliance Co., Toledo, Ohio.
 Wood, Alan, Steel Co., Conshohocken, Pa.
 Wood Conversion Co., Chicago.
 Woodhead, Daniel, Co., Chicago.
 Woods, Edwin S. & Co., Chicago.
 Worthington Pump & Machinery Corp., Harrison, N. J.
 Wrought Iron Co. of America, Lebanon, Pa.
 Yale & Towne Manufacturing Co., Stamford, Conn.
 Youngstown Steel Door Co., Cleveland, Ohio.

Traffic

Chicago-Denver Train Service Improved

The Chicago, Burlington & Quincy and the Chicago & North Western-Union Pacific will place their Chicago-Denver summer trains on a 25-hr. schedule on June 8, instead of the 25-1/2 hr. schedule which prevailed last summer. The new schedule applies to the Denver Limited of the Burlington and the Denver Special of the North Western. The return train of the Burlington, the Atlantic Coast Limited will be renamed the Denver Limited and will operate on a 24-3/4 hr. schedule. The Chicago & North Western has reequipped the Columbine, its Chicago-Denver train, and the Colorado Express, between Chicago and Denver, has been renamed the Mountain Bluebird.

Lake Cargo Coal Controversy Re-Opened

The Interstate Commerce Commission has denied the petitions of the railroads serving the southern coal district that it dismiss the new complaints filed by Pennsylvania and Ohio coal operators which attack the rates on lake cargo coal from the southern district to Lake Erie ports for transshipment, and has assigned the case for hearing at Washington on June 16 before Examiner Bardwell. The case has been before the commission on several previous occasions and has aroused much political controversy which has entered into the question of the confirmation by the Senate of several of the President's appointments to the commission.

At present these rates are on a compromise basis by which the rates from the northern fields are 35 cents a ton less than those from the southern fields.

Central Western Shippers' Board

The eighth annual meeting of the Central Western Shippers' Advisory Board will be held in Idaho Falls, Idaho, on June 19 and 20. The first day will be devoted to a hearing on agricultural subjects including a thorough airing of the laws, rules and regulations governing plant quarantines and pest control. Russell E. Shepherd, chairman of the Federal Land Bank of Spokane, president of the Idaho State Chamber of Commerce and chairman of the agricultural council of this board, will preside on the first day.

The second day will be devoted to a careful survey of the shipping needs of the states of Colorado, Idaho, Nebraska, Utah and Wyoming for the months of July, August and September. Governor H. C. Baldridge of Idaho will deliver an address of welcome. J. W. Shorthill, secretary of the National Farmers' Elevator Association and general chairman of the board, will preside. H. G. Taylor,

manager of public relations of the Car Service division, American Railway Association, will outline the general transportation conditions of the country, and W. J. Smith, district manager, will describe the local railroad conditions. The two-day meeting will close with a banquet and entertainment arranged by the Idaho Falls Chamber of Commerce, at which Paul Shoup, president of the Southern Pacific, is expected to be the principal speaker.

Freight Traffic in March

The volume of freight transported by the Class I railroads in March amounted to 35,300,629,000 net ton-miles, according to reports received from the railroads by the Bureau of Railway Economics. Compared with March, 1929, this was a reduction of 4,927,329,000 net ton-miles, or 12.2 per cent, and it was a reduction of 10.6 per cent, under March, 1928. In the Eastern district, the reduction was 13 per cent compared with the same month in 1929, in the Southern district 10.9 per cent and in the Western district, 11.7 per cent.

The first three months of 1930 showed 106,364,580,000 net ton-miles, a reduction of 9.5 per cent under the corresponding period in 1929 and a reduction of 4.6 per cent, under the same period in 1928. The Eastern district for the three months reported a decrease of 9 per cent, compared with the same period in 1929, the Southern district a decrease of 9.5 per cent, and the Western 10.3 per cent.

The average speed of freight trains in March was 13.8 miles an hour, an increase of 0.3 mile above the best previous record of 13.5 miles, which was attained in February, this year. It also was an increase of 0.7 mile above the average for March last year.

The average daily movement per freight car in March this year was 28.9 miles, compared with 32.3 miles for the same month last year, and 30.9 miles in March, 1928.

The average load per car in March this year was 25.6 tons, or a decrease of 0.2 ton below the average for March, 1929, and a decrease of 0.5 ton below March, 1928.

Long-And-Short-Haul Controversy Revived

The perennial controversy over the adjustment of transcontinental freight rates has been revived again by the opening of hearings before a Congressional committee; a sub-committee of the Senate committee on interstate commerce. This action is taken on a bill introduced by Senator Pittman, of Nevada, to amend the long-and-short-haul rule of the fourth section of the interstate commerce act to prohibit departures from the rule on account of water competition through the Panama canal. W. S. McCarthy, of Salt Lake City, president of the Intermediate Rate Association, and Frank Lyon, counsel for intercoastal steamship lines, appeared to urge the passage of the bill on May 14, referring to pending applications of the Southern Pacific for fourth section relief as representing a "constant threat" that there would be

such departures as long as the commission has the power to authorize them. Mr. McCarthy said that since March 15, 1918, there had been no fourth section departures on transcontinental traffic such as are opposed by the intermountain section, so that the situation was the same as if the bill had been in effect. He also declared that the tonnage of the transcontinental lines had increased faster than that of the canal. On May 15 and 16 a number of representatives of employees of the Southern Pacific appeared in opposition to the bill on the ground that the road should be permitted to compete with the canal so as to give more work to railway men. H. M. Remington, of the San Francisco Chamber of Commerce, and F. H. Plaisted, freight traffic manager of the Southern Pacific, also appeared in opposition to the bill.

Mr. Plaisted pointed out that only about one-third of the total expenses of a railroad are directly affected by the taking of additional traffic, while the remaining two-thirds are fixed expenses which remain constant regardless of whether additional traffic is taken or not. "Yet of all the country's industries," he said, "the railroads, capable as they are of employing great flexibility in price-making, are singled out for the most unyielding and rigid regulation of the right and privilege to sell their product in accordance with its value to the purchaser." The proposal of the bill should be rejected, he said, and Congress should adhere to "its previous wise policy under which it has been declared that while a higher charge for a shorter than a longer haul is *prima facie* unreasonable, this *prima facie* view may be overthrown by the facts in special cases, and that the Interstate Commerce Commission shall retain the power to decide when the circumstances of the case make it proper and fair and in the public and the carriers' interest to relieve the railroads from the *prima facie* rule of the long-and-short-haul clause."

A. L. Flinn, rate expert of the Minnesota Railroad and Warehouse Commission, appeared in opposition to the bill, and J. Paul Kuhn, member of the Illinois Commerce Commission, told of a conference at which representatives of the Illinois, Wisconsin, Michigan, Indiana, Minnesota and Iowa commissions had gone on record against it. J. P. Haynes, executive vice-president of the Chicago Association of Commerce, appeared in opposition to the bill on May 20 as chairman of the special fourth section committee of the National Industrial Traffic League. The league takes the position that the exercise of discretion by the commission, after investigation, in granting or declining fourth section relief, is in the public interest.

Rates on Newsprint from Canada

Freight rates on newsprint paper from Canadian mills to points in the United States in some cases are lower than rates for corresponding distances in Canada. This allegation was advanced last week before the Board of Railway Commiss-

sioners at Ottawa, when hearing of the claims of the Canadian National and Canadian Pacific for increased international rates on newsprint was opened.

The hearing arises out of increases announced by the railways some time ago. These increases were not put in effect because, on the application of newsprint interests, the board suspended their operation. The present hearing is to determine whether the suspension is to become permanent. The hearing today follows a hearing held in the United States last week before the Interstate Commerce Commission. The judgment of the United States body was reserved.

Comparative freight rates on international and purely Canadian traffic were outlined by J. L. Knowles, assistant freight traffic manager of the Canadian National, who was examined by Alistair Fraser, counsel for the Canadian National. The Canadian rates, he explained, were arrived at on a mileage basis. Under the new schedule proposed by the railways the international rates would be determined on the same basis.

During the past ten years the traffic in newsprint across the border had greatly increased, the witness stated, due to a decline in production in the United States and an increase in Canada. In 1918, he said, the United States produced 63.3 per cent of the newsprint manufactured on this continent, and Canada 36.7 per cent.

In 1929 the United States' share had fallen to 33.8 per cent, all other Canadian production had increased to 66.2 per cent.

Practically all, more than 99 per cent, of the Canadian paper production was in the form of newsprint. Freight rates on this class of paper were low, while rates on other classes of paper were higher, Mr. Knowles said. This meant that while United States railroads could participate in the higher earnings to be derived from handling other classes of paper produced at points along their lines, Canadian railroads were confined to newsprint, with the low freight rates attached to it.

Should the new freight rates on newsprint paper shipped to the United States proposed by the Canadian railways be put in effect, all existing through freight rates on newsprint shipped from Canada to the southern States would be cancelled. This testimony was given at the hearing before the Board by A. Walker, assistant general freight agent for the Canadian Pacific.

Present through rates on newsprint shipped to the southern territory were quite low, the witness stated, and in addition to this the railway companies of the southern States demanded such a large share of the freight returns that the Canadian railroads were handling this freight at a loss. Negotiations were being carried on with United States road in an attempt to reach an agreement satisfactory to the Canadian railways but so far had been without success.

Should the Board approve the new rates and the railways fail to reach an agreement over the division of the freight charges the present through rates will be abolished and the standard rates on the different railways over which the traffic moves would prevail.

Equipment and Supplies

Locomotives

THE READING is inquiring for 10 locomotive tenders.

THE GENERAL AMERICAN TANK CAR CORPORATION has ordered one six-wheel switching locomotive from the American Locomotive Company. This locomotive will have 18-in. by 24-in. cylinders and a total weight in working order of 108,000 lb.

Freight Cars

THE CHESAPEAKE & OHIO has ordered four air dump cars of 30 cu. yd. capacity from the Magor Car Corporation.

THE PHILIPPINE RAILWAY is inquiring for 20 cane and 10 box cars of 30 tons' capacity.

THE CANADIAN PACIFIC has ordered 150 ore cars from the Canadian Car & Foundry Company.

THE ANACONDA COPPER MINING COMPANY is inquiring for 17 tank cars—two of 4,000 gal. capacity and 15 of 8,000 gal. capacity.

THE FRUIT GROWERS EXPRESS has ordered 166 steel underframes for refrigerator cars from the Pressed Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of April 26.

Passenger Cars

THE ERIE has ordered 20 suburban coaches from the Standard Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of April 26.

THE RICHMOND, FREDERICKSBURG & POTOMAC will ask for bids shortly for two new de luxe passenger coaches to be of steel construction, with overall length of 86 ft. 1 1/4 in.

THE ILLINOIS CENTRAL is inquiring for nine coaches and six compartment coaches. This is in addition to its inquiries for 20 suburban cars and 15 baggage and express cars reported in the *Railway Age* of April 19 and May 17.

Iron and Steel

THE PERE MARQUETTE has ordered 885 tons of structural steel for grade separation at Dix avenue, Detroit, Mich., from the American Bridge Company.

THE LEHIGH VALLEY has ordered 900 tons of steel for bridges from the McClintic-Marshall Company.

THE NEW YORK CENTRAL has ordered 200 tons of steel for a bridge at Marcy, N. Y., from the American Bridge Company.

THE BALTIMORE & OHIO has ordered 225 tons of steel for a bridge from the Shoemaker Bridge Company. An order for 200 tons of bridge steel has also been given to the McClintic-Marshall Company.

Machinery and Tools

THE PACIFIC FRUIT EXPRESS has ordered one standard axle lathe from Manning, Maxwell & Moore, Inc.

THE ATCHISON, TOPEKA & SANTA FE has ordered one steam-operated locomotive pile driver from the Orton Crane & Shovel Company.

THE SOUTHERN PACIFIC has ordered one Putnam machine works motor driven combination car axle journal and axle lathe, from Manning, Maxwell & Moore, Inc.

THE NEW YORK CENTRAL has ordered two 90-in. quartering and pin turning machines from Manning, Maxwell & Moore, Inc.

THE CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC has ordered two 90-in. journal turning, quartering and pin turning machines from Manning, Maxwell & Moore, Inc.

THE MISSOURI-KANSAS-TEXAS has ordered one Greenlee Brothers & Company's No. 105 all electric 30-in. by 8-in. four-roll single planer, one Mattison Machine Works No. 226 all-electric moulder, capacity 12 in. by 6 in., and one Quick-work Company's No. 40-A rotary shear, 48 in. depth of throat, with capacity to shear 1/2-in. plate, for use at its Sedalia, Mo., shops, from Manning, Maxwell & Moore, Inc.

Signaling

THE CANADIAN PACIFIC has ordered from the Union Switch & Signal Company one eight-lever electric interlocking machine for Agincourt, Ontario, and a 12-lever machine for Leaside. The order also includes 17 searchlight signals, and other material, for the installation of automatic block signals between London, Ont., and Lobo.

THE PEORIA & PEKIN UNION has contracted with the General Railway Signal Company for the installation of centralized traffic control between the Illinois River Bridge, at Peoria, and Pekin, Ill., 7.4 miles, double track. The dispatcher will be located at the Illinois River Bridge and will operate also the drawbridge and the electric interlocking plant at that point.

Miscellaneous

THE SPERRY DEVELOPMENT COMPANY has ordered two special gas rail cars from the J. G. Brill Company.

THE CANADIAN PACIFIC on May 17 opened to traffic its recently-constructed branch line from Willingdon, Alta., to Vegreville.

Supply Trade

The New York office of the **Lima Locomotive Works, Inc.**, has been moved to 60 East Forty-second street.

The American Arch Company, Inc., has moved its general offices to the Lincoln building, 60 East Forty-second street, New York City.

The Franklin Railway Supply Company, Inc., on May 24 will move its offices to the Lincoln building, 60 East Forty-second street, New York City.

The Textileather Corporation has moved its executive offices and all production facilities from Newark, N. J., to Stickney avenue and Dayton street, Toledo, Ohio.

Ernest R. Funk has been appointed mechanical representative of **The J. S. Coffin, Jr., Company**, Englewood, N. J. Mr. Funk was formerly with the Locomotive Stoker Company.

The W. N. Matthews Corporation, St. Louis, Mo., has let contracts for the construction of a three-story addition to its main factory at 3722 Forest Park Boulevard, St. Louis.

Richard F. Straw has been appointed sales manager of the **Wright Manufacturing Company**, Bridgeport, Conn. Mr. Straw has been connected with this company in a sales executive capacity for more than 12 years.

O. O. Williams, for several years a member of the **Magor Car Corporation** sales department at New York, has been appointed assistant general sales manager of that corporation, with headquarters at New York.

J. J. Hennessy of the **Hennessy Lubricator Company**, has his headquarters as formerly, at the main office of the company, 136 Liberty street, New York. A branch office was recently opened by the company at 20 East Jackson boulevard, Chicago.

Richard L. Foster, assistant general manager of sales of the **American Steel & Wire Company**, Chicago, has resigned to become general manager of sales of the **Wickwire Spencer Steel Company** and its subsidiaries, the **American Wire Fabrics Corporation** and the **Wickwire Spencer Sales Corporation**, with headquarters at New York.

At a directors' meeting of the **Foote Bros. Gear & Machine Company**, Chicago, on May 12, the following additional officers were elected: **C. C. Commons**, first vice-president and assistant secretary; **F. A. Emmons**, vice-president in charge of gear and reducer sales and advertising; **H. H. Bates**, vice-president in charge of road machinery division; **W. A. Barr**, vice-president in

charge of manufacturing; **W. J. Heine- man**, assistant vice-president, and **W. O. Bates, Jr.**, assistant vice-president.

The Ohio Steel Foundry Company, of Lima, and Springfield, Ohio, has purchased the steel foundry department and steel casting business of the **Industrial Brownhoist Corporation**, of Cleveland, Ohio, and Bay City, Mich. The steel foundry is located at Bay City and will be operated at that point by the Ohio Steel Foundry Company. Extensive improvements are planned, to include a modern 15-ton open hearth furnace.

At a recent meeting in Montreal, Que., of the shareholders of the **British Empire Steel Corporation**, the **Dominion Steel Corporation** and the **Dominion Iron & Steel Company**, the plan reported in the *Railway Age* of April 26 for the merger of these three companies was approved. **C. B. McNaut** is president of the **Dominion Steel & Coal Corporation** under which name the merged companies will operate.

The Inland Steel Company, Chicago, has completed a six-story office building at its Indiana Harbor, Ind., works, in which are housed the offices of the works manager, the general superintendent, the assistant general superintendent, the production manager, the time department, the purchasing department, the traffic department, the works auditing department and the engineering department.

The Whiting Corporation (Canada), Ltd., with headquarters at 129 Adelaide Street, west, Toronto, Ont., has been formed to manufacture all the products formerly made by the **Whiting Corporation**, Harvey, Ill., and imported into that country. Manufacturing operations will be carried on at Hamilton, Ont., while branch offices will be maintained in Montreal, Que., Winnipeg, Man., Edmonton, Alta., Calgary, and Vancouver, B. C. The Canadian organization will also represent the Whiting subsidiaries, the **Swenson Evaporator Company**, the **Grindle Fuel Equipment Company**, and the **Harrington division** which manufactures Whiting stokers.

The General Steel Castings Corporation has reorganized its sales department into two units; one associated with the Commonwealth division, Granite City, Ill., and the other with the Eastern division, Eddystone, Pa. Customers west of a line connecting the northwestern corner of Pennsylvania and Mobile, Ala., will be served by the Commonwealth division and those east of this line by the Eastern division. **Charles P. Whitehead** has been appointed sales assistant to vice-president and general manager, Commonwealth division and **William M. Sheehan** has been appointed sales assistant to vice-president and general manager Eastern division.

The Carolina Wood Preserving Company, a South Carolina corporation

representing the interest of Grant B. Shipley, Pittsburgh, and J. F. Prettyman & Sons, Charleston, S. C., has purchased the wood preserving plant of the latter company at Charleston. The officers of the Carolina Wood Preserving Company are: president, **Grant B. Shipley**; vice-president, **E. S. Park**, vice-president and general manager, **Thomas J. Thorne**, manager of the wood preserving department of J. F. Prettyman & Sons; secretary and treasurer **H. W. Wehe** and **Cannon F. Prettyman**, formerly vice-president and general manager, J. F. Prettyman & Sons. Mr. Shipley is president of the **Century Wood Preserving Company**, Pittsburgh, which, through subsidiary companies operates plants at Nashua, N. H., Newport, Del., Hagerstown, Md., Orrville, O., Broadford Junction, Pa., and Reed City, Mich.

The Prime Manufacturing Company, Milwaukee, Wis., assumed entire control of Alemite products for locomotives, railway cars, railway shop equipment, etc., on May 1. Henceforth they will manufacture and distribute all Alemite products for the above mentioned railway equipment from their plant in Milwaukee. This company has also taken over the railway field personnel of the Alemite Corporation, which includes **John H. Karow**, **Charles Kelly Ramp** and **N. J. Kamen**. These men will continue to work among the railroads on Alemite products as well as the standard Prime line of washout plugs, windshield wings and all small parts for locomotives.

Directors of the **American Rolling Mill Company**, Middletown, Ohio, and the **Sheffield Steel Corporation**, with plants at East Kansas City, Mo. have concluded negotiations for combining the interests of the two companies according to an announcement by **George M. Verity**, chairman and **Charles R. Hook**, president of the American Rolling Mill Company and **W. L. Allen**, president of the Sheffield Steel Corporation. The combined companies will have plants at Middletown, Ohio, Zanesville, and Columbus, Ashland, Ky., Butler, Pa., Kansas City, Mo., and Oklahoma City, Okla. The Sheffield Corporation was formed in 1925 as a Delaware Corporation to acquire the Kansas Bolt & Nut Company, which was organized in 1888. In addition to two blue annealing mills, the Sheffield Steel Corporation operates four open-hearth furnaces, a bar iron and rail and rerolling mill, bolt, nut and forging works, a wire mill, bar and rod mill and a blooming mill and has a capacity in excess of 200,000 tons annually.

Obituary

Robert Bruce Steward, a vice-president and director of the **Valve Pilot Corporation**, New York, since its organization, died on May 17.

Construction

ABILENE & EASTERN.—Examiner Sullivan, of the Interstate Commerce Commission, has recommended in a proposed report that this company be authorized to build a line from Abilene to Cross Plains, Tex., 43 miles.

ATCHISON, TOPEKA & SANTA FE.—This company closes bids on June 3 for the construction of an extension between Amarillo, Tex., and Boise City, Okla., about 120 miles, a portion of the projected line between Amarillo, Tex., and Las Animas, Colo., which will have a total length of about 220 miles.

BALTIMORE & OHIO.—This road has purchased land at Hamilton, O., which will be used for an addition to the yard, at a cost of about \$350,000.

CHESAPEAKE & OHIO.—This company has applied to the Interstate Commerce Commission for authority to extend its Logan subdivision from West Gilbert up Gilbert Creek, Horsepen Creek and Browning Fork, 4½ miles, in Mingo county, W. Va.

CHICAGO, BURLINGTON & QUINCY.—A contract has been awarded to Cameron, Joyce & Co., Keokuk, Iowa, for the grading for a portion of the extension to the yard at Galesburg, Ill. This contract involves about 700,000 cu. yd. of excavation.

CHICAGO, BURLINGTON & QUINCY.—The Missouri Supreme Court has refused a writ of mandamus sought by Attorney General Stratton Shartel of Missouri at the request of residents of Macon, Mo., to compel the Iowa & St. Louis, which is now part of the Chicago, Burlington & Quincy, to construct a 15-mile extension from Elmer, Mo., to Macon.

CHICAGO & NORTH WESTERN.—A contract for the construction of the substructures for several grade separation structures at Kenosha, Wis., has been let to the White Construction Company, Chicago. A contract has been awarded to the Materials Service Corporation, Chicago, for the material to be placed in about one mile of track elevation embankment at Kenosha. This work is part of a three-year program of elevation of the double-track line extending through Kenosha.

CHICAGO, ROCK ISLAND & PACIFIC—ST. LOUIS-SAN FRANCISCO.—Plans for the construction of a new union passenger station at Oklahoma City, Okla., at a total cost of \$1,623,000 have been approved by the Oklahoma Corporation Commission. An order issued by the commission provides that the work shall be completed by December 4, 1930. It is estimated that \$1,198,600 will be expended for the site and the buildings, \$225,180 for the rearrangement of tracks and \$200,000 for an interlocking plant.

ERIE.—This company is receiving bids until about June 2 for the construction of a new double-deck pier approximately 1,050 ft. long by 100 ft. wide, to be located south of existing pier No. 9, at Jersey City, N. J.

IOWA & ST. LOUIS.—See Chicago, Burlington & Quincy.

NEW YORK CENTRAL.—The Public Service Commission of New York has approved as not excessive the low bids of \$642,596 submitted by the Mazzola Barber Construction Company, Buffalo, N. Y., for the elimination of the Indian Hill and Bennett crossings in Manchester, N. Y., and of \$75,556 submitted by E. P. Munitz, Inc., Buffalo, for the reconstruction of the bridge carrying South Park avenue, Blasdell, N. Y., over the New York Central tracks. The Commission has also directed elimination of the Mohawk river road-Deerfield county highway, crossing of this company's line in Marcy, N. Y., by carrying the highway under the tracks about 250 ft. south of the present crossing at an estimated cost of approximately \$156,000.

NEW YORK, NEW HAVEN & HARTFORD.—A contract for the construction of a 300-ton reinforced concrete coaling station at Waterbury, Conn., has been let to the Roberts & Schaefer Company, Chicago.

OREGON-WASHINGTON RAILROAD & NAVIGATION COMPANY.—A contract for the construction of a passenger station at La Grande, Ore., at a cost of about \$150,000, has been awarded to Tranchell & Parellins, Portland, Ore.

PENNSYLVANIA.—A contract for the construction of a four-track reinforced concrete automatic electric coaling station of 500-ton capacity at the West Philadelphia (Pa.) shops has been awarded to the Roberts & Schaefer Company, Chicago.

PENNSYLVANIA.—Bids have been received for the construction of a new \$2,000,000 pier at the foot of Bay street, Jersey City, N. J. The new pier, to be known as Pier F, is the third of three in the Pennsylvania's \$50,000,000 rail-water terminal project at Jersey City. It will be of steel and concrete construction and between 900 and 1,000 ft. long.

SPOKANE, PORTLAND & SEATTLE (Oregon Electric).—A contract has been let to the Hauser Construction Company, Portland, Ore., at a cost of about \$200,000, for the clearing of the right of way and the bridging for the construction of the first section of the extension which this company plans to build between Lebanon, Ore., and a point in the Calapooya River valley, a total of about 30 miles.

TIMBER PRODUCTS RAILWAY COMPANY.—The Ontario legislature has passed an act providing for the incorporation of this company, which plans the construction of a railway for freight service from Trenton, Ont., east into Lennox and Addington counties, about 30 miles.

Financial

AKRON, CANTON & YOUNGSTOWN—Bonds.—The Interstate Commerce Commission has authorized this company to issue \$1,500,000 of its 5½ per cent, series B, general and refunding mortgage bonds maturing in 1945. The issue is redeemable at premiums ranging downward from 5 per cent and is authorized for sale to Otis & Co., Cleveland, Ohio, at 96.375, which will make the average annual cost to the railroad approximately 5.87 per cent.

BALTIMORE & OHIO.—*Authorized to Acquire Control of B. & S.*—The Interstate Commerce Commission on May 21 made public a report by Division 4 authorizing the B. & O. to acquire control of the Buffalo & Susquehanna by purchase of its stock at \$90 a share, subject to a condition that it hold open for six months an offer to pay the same price for the remaining outstanding shares as for that already deposited under an agreement with a committee. At the time of the hearing on the application there had been deposited 89.06 per cent of the stock, at a cost of the B. & O. of \$5,611,050. The cost of all the stock at the same price would be \$6,300,000. The B. & S. was assigned to the B. & O. system in the commission's consolidation plan but, since complete consolidation will necessitate further proceedings, the commission requires that the continuity of records and statistics of the B. & S. be preserved for purposes of comparison. The line of the B. & S. extends from Sagamore, Pa., to Addison, N. Y., 189 miles, and it has branches bringing its total mileage up to 253. Use of a portion of the line as an additional link in a proposed shorter through line between Chicago and New York was declared to be one of the principal purposes of the proposed control. The Delaware & Hudson opposed the acquisition by the B. & O. without any showing that it has reasonable prospect of obtaining control also of the Reading, but the report says that the case has a broader aspect and that the present controlling consideration is the most advantageous disposition of the B. & O. in the building up of an efficient and economical transportation system.

CAPE FEAR RAILWAYS, INC.—Acquisition.—This company has applied to the Interstate Commerce Commission for authority to acquire and operate, under lease from the Secretary of War, a line in Fort Bragg Military Reservation, N. C., and a line from the post to Fort Bragg Junction, 8 miles of line and 6 miles of spur track.

CENTRAL VERMONT—Receivers Discharged.—Judge Harland B. Howe in the United States Court at Burlington, Vt., on May 17 formally ended the receivership of the Central Vermont Railway Company by discharging George A. Gaston and John W. Redmond as receivers. The receivership was inaugurated

on December 12, 1927, as a result of the Vermont flood of that year which disabled the line, and was lifted on January 31, 1930, with the taking over of the property by the Central Vermont Railway, Inc. Judge Howe, accepting the final reports of the receivers, congratulated Mr. Gaston and Judge Redmond on their successful stewardship. He said, "The results have demonstrated that the institution of this receivership by the Canadian National Railways Company was, in the circumstances, wise business judgment and greatly in the interest of that company, of the Central Vermont Railway Company and of the people of the State of Vermont. The receivers have been vigorous, diligent and exceedingly successful in rebuilding and operating the railroad."

CHICAGO, ROCK ISLAND & PACIFIC—Securities.—The Interstate Commerce Commission has authorized this company to issue \$32,228,000 of its 4½ per cent, convertible bonds, maturing in 1960, the issue to be sold to stockholders at 95 and any not so subscribed for to be purchased by Speyer & Co. and associates at 95, plus an under writing fee of 2½ per cent, making the average annual cost to the railroad 4.98 per cent. The issue is redeemable from 1936 to 1955 at 105 and thereafter at a premium of 1 per cent for each six months between the redemption date and maturity. The issue is convertible into common stock between 1931 and 1940 at \$125 a share and the railroad has been authorized to issue not more than \$25,782,400 of common stock as may be necessary to take care of bonds offered for conversion.

DELAWARE & HUDSON.—Bonds.—The Delaware & Hudson Railroad Corporation has been authorized by the Interstate Commerce Commission to sell \$10,000,000 of first and refunding mortgage, 4 per cent bonds of the Delaware & Hudson Company, maturing in 1943, to Kuhn Loeb & Co., at 90½, which will make the average annual cost to the railroad approximately 5.002 per cent.

DELAWARE & HUDSON.—Unification Plan.—The Interstate Commerce Commission has dismissed this company's application for authority to acquire control of railroads in eastern territory for the formation of an Atlantic seaboard terminal system.

DENVER & RIO GRANDE WESTERN.—Acquisition of D. & S. L. Recommended.—M. S. Jameson, examiner for the Interstate Commerce Commission, has recommended in a proposed report that the commission authorize the acquisition by this company of control of the Denver & Salt Lake by purchase of stock on condition that it shall purchase at not exceeding \$155 a share any stock or voting certificates which may be offered it within six months and on the understanding that it shall cause the construction of the Dotsero cut-off to proceed with diligence and despatch immediately following the making of the necessary operating arrangements, under the approval of the public authorities having jurisdiction. The D. & R. G. W. has purchased 4,877 charts and voting trust cer-

tificates representing 16,457 shares of the stock and has entered into an arrangement with George H. Burr & Co., of New York for the purchase of 7,635 additional shares, at \$155 a share, which would give it 57.94 per cent of the outstanding stock. The report says that a condition requiring the building of the cut-off from Dotsero to Orestod, Colo., 41 miles, which would make possible a saving of 173 miles between Denver and Dotsero as compared with the present route of the D. & R. G. W., is unwarranted in view of the fact that this connection is the essence of the applicant's plan, and that a requirement fixing the time of the construction would be unreasonable under the circumstances. Litigation is in progress as to the terms on which the Moffat tunnel would be used.

GREAT NORTHERN.—Bonds.—This company has applied to the Interstate Commerce Commission for authority to issue and sell \$20,000,000 of general mortgage 4½ per cent bonds, to the First National Bank and J. P. Morgan & Co., at 94½. The proceeds are to reimburse the treasury.

GULF, TEXAS & WESTERN.—Receivership Dissolved.—An order issued by Judge E. R. Meek of the United States District Court for the Northern District of Texas has taken this road out of the receivership in which it was placed by the same court on January 24, 1921. The receiver, W. Frank Knox, is also president of the company.

LOUISIANA & ARKANSAS.—New Director.—Samuel Haas of Alexandria, La., has been elected a member of the board of directors.

MAINE CENTRAL.—Acquisition.—This company has applied to the Interstate Commerce Commission to acquire control of the Upper Coos, which it now operates under lease, by purchasing all or a majority of its 3500 shares of stock at not exceeding \$100 a share.

MISSOURI-KANSAS-TEXAS.—Dividends.—This company has declared a dividend of \$1 on its common stock which if continued will be equivalent to four dollars on an annual basis. This is the first dividend to be declared by this company since its reorganization in 1922.

NEW YORK CENTRAL.—Bonds.—This company has filed with the Interstate Commerce Commission a supplemental application for authority to sell at 90 and interest instead of 96 an issue of \$5,700,000 of Boston & Albany improvements bonds of 1928, guaranteed by the N. Y. C.

NEW YORK, CHICAGO & ST. LOUIS.—Annual Report.—The annual report of this company for 1929 shows net income after interest and other charges of \$7,390,042, as compared with net income in 1928 of \$6,378,710. Selected items from the income statement follow:

	1929	1928	Increase or decrease
RAILWAY OPERATING REVENUES	56,385,457	52,876,520	+ 3,508,937

	1929	1928	Increase or decrease
Maintenance of way	7,015,494	6,615,575	+ 399,919
Maintenance of equipment	10,688,774	9,829,183	+ 859,592
Transportation	19,466,457	18,505,413	+ 961,044
TOTAL OPERATING EXPENSES	39,896,885	37,866,536	+ 2,030,349
NET REVENUE FROM OPERATIONS	16,488,571	15,009,984	+ 1,478,587
Railway tax accruals	3,055,399	2,981,124	+ 74,275
Railway operating income	13,428,146	12,020,555	+ 1,407,591
Hire of freight cars—Dr.	2,778,487	2,436,081	+ 342,406
Joint facility rents	248,685	145,661	+ 103,024
Non-operating income	3,710,842	3,230,706	+ 480,136
GROSS INCOME	17,138,988	15,251,261	+ 1,887,727
Rent for leased roads	3,904	1,457	+ 2,447
Interest on funded debt	5,919,507	5,284,222	+ 635,285
TOTAL DEDUCTIONS FROM GROSS INCOME	9,748,945	8,872,551	+ 876,394
NET INCOME	7,390,042	6,378,710	+ 1,011,332
NEW YORK & HARLEM.—New Director. —Charles C. Paulding, vice-president of the New York Central, has been elected a director of the New York & Harlem, succeeding R. J. Cary, deceased.			
PERE MARQUETTE.—Equipment Trust. —The Interstate Commerce Commission has authorized this company to assume obligation and liability for \$5,100,000 of its series of 1930 equipment trust, 4½ per cent certificates, maturing in installments from 1931 to 1945. The issue is authorized for sale to the highest bidder, a syndicate headed by the Bankers Co. of New York, at 99.137, which will make the average annual cost to the railroad approximately 4.636 per cent.			
RUTLAND.—Annual Report. —The 1929 annual report of this company shows net income after interest and other charges of \$681,938, as compared with net income in 1928 of \$592,096. Selected items from the income statement follow:			
RAILWAY OPERATING REVENUES	6,276,683	6,626,282	- 349,599
Maintenance of way	1,164,390	1,312,382	- 147,992
Maintenance of equipment	1,185,231	1,221,136	- 35,905
Transportation	2,330,405	2,472,798	- 142,392
TOTAL OPERATING EXPENSES	5,035,512	5,361,875	- 326,362
Operating ratio	80.23	80.92	.69
NET REVENUE FROM OPERATIONS	1,241,171	1,264,408	- 23,237
Railway tax accruals	337,744	336,667	+ 1,077
Railway operating income	903,317	927,690	- 24,373
Equipment rents—Net Cr.	36,334	Dr. 51,098	+ 87,432
Joint facility rents—Net Cr.	57,360	64,291	- 6,931
NET RAILWAY OPERATING INCOME	997,011	940,883	+ 56,128
Non-operating income	130,883	106,502	+ 24,381
GROSS INCOME	1,127,894	1,047,385	+ 80,510
Rent for leased			

	1929	1928	Increase or decrease
roads	19,000	19,000
Interest on funded debt.	414,741	421,420	— 6,679
TOTAL DEDUCTIONS FROM GROSS INCOME	445,956	455,289	— 9,333
NET INCOME....	681,938	592,096	+ 89,842

SOUTHERN PACIFIC—Equipment Trust.—The Interstate Commerce Commission has authorized this company to assume obligation and liability in respect of \$6,000,000 of its 4½ per cent, series M, equipment trust certificates, maturing in installments from 1931 to 1945. The issue is authorized for sale to the highest bidder, Freeman & Co. and Chase Securities Corp., at 99.355, which will make the average annual cost to the railroad approximately 4.601 per cent.

WABASH—Lehigh Valley Stock.—The Interstate Commerce Commission has authorized this company to pledge and repledge all or any part of 177,900 shares of common stock of the Lehigh Valley which it owns as security for short term notes.

WABASH—New Director.—A. K. Atkinson, assistant to the vice-president in charge of the accounting and treasury departments of the Wabash, has been elected a member of the board of directors.

WESTERN MARYLAND—Annual Report.—The 1929 annual report of this company shows net income after interest and other charges of \$2,917,822, as compared with net income in 1928 of \$2,375,185. Selected items from the income statement follow:

	1929	1928	Increase or decrease
Average mileage operated	875.18	862.14	+ 13.04
RAILWAY OPERATING REVENUES	18,985,707	18,592,557	+ 393,150
Maintenance of way	3,041,864	2,859,265	+ 182,599
Maintenance of equipment	3,640,116	3,653,259	— 13,143
Transportation	4,954,666	5,040,077	— 85,411
TOTAL OPERATING EXPENSES	12,687,143	12,676,171	+ 10,972
Operating ratio	66.83	68.18	— 1.35
NET REVENUE FROM OPERATIONS	6,298,564	5,916,386	+ 382,178
Railway tax accruals	1,055,073	983,478	+ 71,595
Railway operating income	5,242,062	4,931,204	+ 310,858
Hire of equipment—Net	801,489	504,720	+ 296,769
NET RAILWAY OPERATING INCOME	5,824,583	5,250,619	+ 573,964
Non-operating income	194,903	144,236	+ 50,667
GROSS INCOME	6,019,486	5,394,855	+ 624,631
Rent for leased roads	89,130	89,130
Interest on funded debt	2,602,308	2,605,268	— 2,960
TOTAL DEDUCTIONS FROM GROSS INCOME	3,101,664	3,019,670	— 81,994
NET INCOME....	2,917,822	2,375,185	+ 542,637

WHEELING & LAKE ERIE—Cleveland Terminal Litigation.—The Supreme Court

of the United States on May 19 affirmed the decree of the district court for the northern district of Ohio which had denied an injunction sought by the Pittsburgh & West Virginia, as a minority stockholder in the Wheeling company, to set aside an order issued by the Interstate Commerce Commission authorizing the Wheeling to abandon its Ontario street passenger station at Cleveland, Ohio, and to use the facilities of the Cleveland Union Terminal Company.

WHEELING & LAKE ERIE—Asks Dismissal of Applications to Acquire It.—This company has filed with the Interstate Commerce Commission motions for the dismissal of the three applications now pending before the commission for authority to acquire control of the Wheeling, which have been assigned for hearing on June 9. The applications were filed by the Wabash as the first of a series of separate applications toward the establishment of System No. 7 of the commission's consolidation plan; by the New York, Chicago & St. Louis, which now owns control of the Wheeling subject to a trusteeship; and by the Pittsburgh & West Virginia, which is also assigned to System No. 7. As to the Wabash and P. & W. V. applications the Wheeling says they are in the nature of applications designed to effect consolidation which would constitute an inter-system interest by the Pennsylvania inconsistent with the direction given by the commission in its consolidation report, as 49 per cent of the Wabash stock is held by the Pennsylvania Company and 74 per cent of the voting shares of the P. & W. V. is held by the Pennroad Corporation. Objection is made to the Nickel Plate application on the ground that it does not conform to the commission's rules of practice because not accompanied by a motion to amend the consolidation plan.

WHITE RIVER—Reorganization.—The White River Railroad, Inc., has applied to the Interstate Commerce Commission for authority to issue \$198,200 of stock for the purchase of the property of the White River Railroad, as assignee of the purchaser at foreclosure sale, and also \$26,800 of additional stock for expenses in connection with the reorganization. It also asks authority to acquire and operate the property.

Average Prices of Stocks and of Bonds

	May 20	Last week	Last year
Average price of 20 representative railway stocks.	127.60	127.41	133.06
Average price of 20 representative railway bonds.	93.76	93.77	90.78

Dividends Declared

Chestnut Hill.—\$.75, payable June 4 to holders of record May 21 to June 3.

Cincinnati, New Orleans & Texas Pacific.—Preferred, 4 per cent, semi-annually, payable June 24 to holders of record June 6.

Delaware & Bound Brook.—2 per cent, quarterly, payable May 20 to holders of record May 14.

Louisville & Nashville.—3½ per cent, semi-annually, payable August 11 to holders of record July 15.

Philadelphia, Germantown & Northern.—\$1.50, quarterly, payable June 4 to holders of record May 21 to June 3.

Pittsburgh, Youngstown & Ashtabula.—Preferred, 1½ per cent, quarterly, payable June 2 to holders of record May 20.

he was appointed contracting freight agent in the Kootenay territory, B. C., which position he held until 1906 when he entered the service of the Canadian National as chief clerk in the general freight office in Winnipeg, Man. He rose in the service of this company to the position of freight traffic manager in December, 1918, having headquarters in Toronto, Ont. In November, 1922, he resigned from the Canadian National service and re-entered the employ of the Canadian Pacific as assistant freight traffic manager, Lines West of Fort William, with headquarters at Winnipeg. He was appointed freight traffic manager for all lines with headquarters at

Railway Officers

Executive

O. P. Van Sweringen and other directors representing Van Sweringen interests, who were elected directors of the Missouri Pacific May 13, have resigned from all other positions as officers or directors of railroads previously held and have applied to the Interstate Commerce Commission only for authority to serve as directors of subsidiary and affiliated companies of Missouri Pacific System, thus avoiding an issue expected to be raised if they had applied for authority to serve on the Missouri Pacific and other companies with which they have been connected. Applications were made public Thursday.

George Stephen, freight traffic manager of the Canadian Pacific, with headquarters in Montreal, Que., has been appointed vice-president in charge of traffic to succeed **William R. MacInnes**, who will retire from that position on May 31. Mr. Stephen was born in Montreal on July 5, 1876. He entered the service of the Canadian Pacific in June, 1899, as clerk in the foreign freight department at Montreal and St. John, N. B. In September, 1899, he was advanced to chief clerk in the general freight office at Winnipeg and later served as traveling freight agent at Manitoba and Saskatchewan. In 1901,



George Stephen

Montreal, in July, 1927, the position he will vacate because of his recent appointment. Mr. MacInnes, who retires from the position of vice-president in charge of traffic, was born in Hamilton, Ont., June 7, 1867. He entered the service of the Canadian Pacific in 1885, as clerk in the purchasing department. He was appointed general agent of the passenger department at Chicago, in 1900, and was advanced to freight traffic



W. R. MacInnes

manager at Montreal, in 1903. In 1905, he became president of the Canadian Freight Association, and in 1918, Mr. MacInnes was promoted to the vice-presidency, from which he retires after 45 years of service.

Financial, Legal and Accounting

John M. Scott, executive chief clerk of the Louisville & Nashville, has been elected secretary, with headquarters at Louisville, Ky., succeeding Joseph C. Michael, who has been elected treasurer, with headquarters at the same point. Mr. Michael succeeds E. S. Locke, deceased.

William H. Sievers, general auditor of the Chicago Great Western, with headquarters at Chicago, has been made administrative head of the accounting department of that railway. Mr. Sievers succeeds Conrad F. Krebs, deceased, who held the title of comptroller.

Wallace H. Marsh, who has been elected secretary of the Spokane, Portland & Seattle, with headquarters at Portland, Ore., in addition to his position as assistant to the president, has been connected with that road for 18 years. He was born at Marseilles, Ill., on November 7, 1882, and obtained his college education at the University of Illinois. His early railway experience was with the Chicago & Eastern Illinois, the Illinois Traction System (now the Illinois Terminal) and the St. Louis-San Francisco. Mr. Marsh was appointed assistant engineer of the Chicago, Ottawa & Peoria (now part of the Illinois Terminal) in 1907, then be-

coming assistant engineer on the Oregon Short Line in 1909 and assistant engineer on the Spokane, Portland &



Wallace H. Marsh

Seattle in 1912. Six years later he was promoted to principal assistant engineer and in August, 1928, to assistant to the president, all with headquarters at Portland.

Operating

The position of assistant trainmaster of the Reading at Port Reading, Pa., is abolished and the operation of the Port Reading yard and all New York division employees at that point will be under the jurisdiction of William Brown, manager, Port Reading terminal.

V. H. Wilson, trainmaster of the Third and Fourth Districts of the Los Angeles division of the Atchison, Topeka & Santa Fe, has been appointed acting superintendent of the Los Angeles division, with headquarters at San Bernardino, Cal., temporarily succeeding R. H. Tuttle, who was granted a leave of absence on May 20.

R. E. Newcomer, assistant to the general manager of the Wabash, with headquarters at St. Louis, Mo., has been appointed superintendent of the Detroit division, with headquarters at Montpelier, Ohio, succeeding A. F. Helm, who has been transferred to the Decatur division, with headquarters at Decatur, Ill. Mr. Helm succeeds J. E. Stumpf, who was granted a leave of absence on May 16 because of ill health. Arthur Davis has been appointed assistant to the general manager to replace Mr. Newcomer.

K. W. Fischer, assistant superintendent of the La Crosse division of the Chicago, Burlington & Quincy at Daytons Bluff (St. Paul), Minn., has been promoted to superintendent of the Creston division, with headquarters at Creston, Iowa, succeeding H. C. Murphy, who has been transferred to the Alliance division, with headquarters at Alliance, Neb. Mr. Murphy succeeds H. J. Hoglund, who has been transferred to the staff of the vice-president in charge of operation at Chicago. W.

R. Eble, who has been on the staff of the general manager of the Lines East of the Missouri river at Chicago, has been appointed assistant superintendent of the Hannibal division at Brookfield, Mo., replacing J. E. Carroll, who has been transferred to Daytons Bluff, where he succeeds Mr. Fischer. J. M. Oldham has been appointed trainmaster of the Omaha division at Omaha, Neb., succeeding J. E. Thiehoff, who has been transferred to the St. Joseph division at St. Joseph, Mo. Mr. Thiehoff replaces F. E. French, who has been transferred to the staff of the general manager at Chicago to succeed Mr. Eble.

Traffic

Marshall O. Culton, general agent for the Chicago Great Western at Tulsa, Okla., has been transferred to Spokane, Wash., succeeding John B. Hoverson, who has been transferred to Tulsa.

F. J. Muckenhoupt has been appointed assistant to the foreign freight traffic manager of the Southern, with headquarters at Louisville, Ky., succeeding H. G. McLean, deceased.

Creston Harris, traveling freight agent on the Chicago, Milwaukee, St. Paul & Pacific at Duluth, Minn., has been promoted to general agent at Winnipeg, Man., succeeding J. M. Cunningham, who has been transferred to Duluth. Mr. Cunningham replaces E. Mather, who has resigned.

John F. McMahon, assistant coal traffic manager of the Illinois Central has been promoted to coal traffic manager with headquarters as before at Chicago, succeeding Burton J. Rowe, deceased. Bently M. Hamilton has been appointed assistant coal traffic manager with headquarters at Chicago.

J. W. Flannery, general traffic manager of the Kroger Grocery & Baking Company, Cincinnati, Ohio, has been appointed assistant traffic manager of the St. Louis-San Francisco, with headquarters at St. Louis, Mo., effective June 1. Mr. Flannery will have charge of off-line solicitation throughout the United States.

F. A. Key, Jr., general freight and passenger agent of the Louisiana, Arkansas & Texas, has been appointed traffic manager in charge of rates and divisions, with headquarters as before at Shreveport, La. H. R. Whiting, general freight agent, has been appointed traffic manager in charge of solicitation, with headquarters as before at Shreveport.

Engineering, Maintenance of Way and Signaling

W. R. Bennett, assistant to the president of the Wabash, has been appointed chief engineer, maintenance of way, with headquarters as before at St. Louis, Mo.

William Michel, chief engineer of the Hocking Valley, with headquarters at Columbus, Ohio, has been appointed chief engineer of the advisory committee on ways and structures of the Chesapeake & Ohio, with headquarters at Cleveland, Ohio.

Mechanical

G. B. Pauley, master mechanic of the Alliance division of the Chicago, Burlington & Quincy at Alliance, Neb., has been transferred to the Casper division at Casper, Wyo., succeeding **H. E. Felter**, who has been appointed assistant master mechanic of the Sheridan division at Sheridan, Wyo. **T. E. Paradise**, master mechanic of the Sheridan division, has also been appointed master mechanic of the Alliance division, with headquarters removed from Sheridan to Alliance.

T. F. Barton, general master mechanic of the Western General division of the Chesapeake & Ohio, with headquarters at Huntington, W. Va., whose appointment as superintendent motive power at Richmond, Va., was announced in *Railway Age* of May 10, page 1167, was born in London, England, on March 21, 1873. He commenced his railway career in 1887, with the Grand Trunk, and remained in the employ of that road for six years, serving successively as machinist apprentice, locomotive fireman and journeyman. During the 10 years



T. F. Barton

he served with the Illinois Central he held the positions of machinist, gang foreman, roundhouse foreman, general foreman, master mechanic and superintendent shops. Prior to his connection with the Chesapeake & Ohio, he was in the employ of the Delaware, Lackawanna & Western for a period of 15 years, serving in the capacity of master mechanic at Kingsland, N. J., when he accepted the position of master mechanic of the C. & O. He was appointed general master mechanic of the Western General division at Huntington, W. Va. on February 1, 1924, which position he vacates because of his recent promotion as superintendent motive power.

Purchases and Stores

G. A. McTyre, storekeeper of the Chesapeake & Ohio at Fulton, Va., has been transferred to Covington, Ky., succeeding **W. H. Stowasser**, who has been transferred to Fulton, as announced in *Railway Age* of May 10, page 1168, but through an error the railroad was omitted.

Obituary

Albion L. Grandy, assistant to the vice-president of the Pere Marquette, with headquarters at Detroit, Mich., who died on May 3, was born at Barton's Landing (now Orleans), Vt., in 1867 and graduated from St. Johnsbury Academy in 1884. He entered railway service with the Frankfort & South Eastern (now part of the Ann Arbor) and in 1889 he became connected with



Albion L. Grandy

the engineering forces of the Chicago & West Michigan and the Detroit, Grand Rapids & Western (both now parts of the Pere Marquette). With those two roads he served as an assistant engineer, being appointed a supervisor on the Erie at Akron, Ohio, in 1900. In 1905 Mr. Grandy was appointed division engineer on the Pere Marquette at Saginaw, Mich., where he remained until 1912 when he was promoted to chief engineer, with headquarters at Detroit. He was further promoted to assistant general manager at Detroit in 1917, being appointed assistant to the president and general manager in 1922. Since 1929, when the Pere Marquette was acquired by the Van Sweringen interests, Mr. Grandy had been assistant to the vice-president in charge of operation.

Albert H. Hogeland, consulting engineer of the Great Northern, with headquarters at St. Paul, Minn., died at Rochester, Minn., on May 14 after two months illness. Mr. Hogeland had been engaged in railway engineering work in the Northwest for 51 years, 45 of which had been spent with the Great Northern. He was born at Southampton, Pa., on January 10, 1858, and graduated from

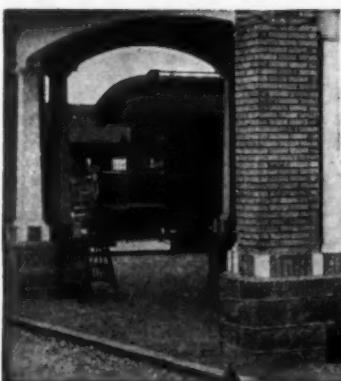
a course in civil engineering at Lafayette College in 1877. In April, 1879, he entered railway service as a rodman on the St. Paul & Pacific (now part of the Northern Pacific). Subsequently he was advanced to levelman, transitman and topographer on the location of the Yellowstone and Rocky Mountain divisions of the Northern Pacific. From 1882 to 1885 he served successively as an assistant engineer on the construction of the Bozeman tunnel of the Northern Pacific, as an assistant engineer on the construction of the St. Paul, Minneapolis & Manitoba (now part of the Great Northern) in North



Albert H. Hogeland

Dakota and as an assistant engineer on the construction of the Wisconsin division of the Northern Pacific. He was then appointed assistant engineer of construction and maintenance of the St. Paul, Minneapolis & Manitoba and the Great Northern lines in Minnesota, North Dakota, South Dakota and Montana, where he remained until September, 1890, when he was advanced to engineer maintenance of way of the Eastern district of the latter road, with headquarters at St. Paul. In 1896 Mr. Hogeland was appointed resident engineer of the same district and in 1902 he was promoted to assistant chief engineer, then being further promoted to chief engineer of the Great Northern in 1903. He served as chief engineer for 10 years and in February, 1913, was appointed consulting engineer. On May 1, 1914, he resumed his former position of chief engineer, which he retained until May, 1925, when he was reappointed consulting engineer. Mr. Hogeland retained the latter position until his death.

RAILROAD OPERATION over the new railway and highway bridge of the Vicksburg Bridge & Terminal Company across the Mississippi river at Vicksburg, Miss., was inaugurated by the Illinois Central on May 1. Operation over the bridge has resulted in the saving of fifty minutes on passenger train schedules and two hours on freight train schedules on the Illinois Central between Meridian, Miss., and Shreveport, La. The bridge replaced a train ferry service between Vicksburg and Delta Point, La.



Railway Age

Motor Transport Section
Devoted to the
Co-ordination of Railway and Highway Service

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F. L. Jacobus
Associate Editor

John C. Emery
Motor Transport Editor

Walter J. Taft
Associate Editor

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)

Goodrich ^{HEAVY DUTY} Silvertowns

equipped with
AIR CONTAINERS
*more than paid
 for themselves
 in six months*



Goodrich Heavy Duty Silvertowns, in combination with Goodrich Air Containers (above), eliminate costly road delays and result in longer mileage.

MR. R. J. CREMEN, of Baltimore, Maryland, dealer in Screened Bank Sand, tells of his regard for Goodrich in the following letter:

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Heavily loaded with sand—traveling over rough roads—Mr. Cremen's fleet of trucks gives their tires and tubes a real "heavy-duty" test.

Goodrich ^{HEAVY DUTY} Silvertowns

• SPECIFY GOODRICH ON YOUR NEW TRUCKS •

Vol. 88

May 24, 1930

No. 21

Regulation Again Put Off

HERE now seems to be little expectation that the Parker bill, H. R. 10288, providing for the regulation of motor coach lines operating interstate, will be acted upon at this session of Congress. Just at the time when it appeared that, after five years of negotiation and compromise, a bill to regulate interstate highway carriers would at last be enacted into law, the steering committee of the Senate announced the program of that legislative body for the remainder of the present session, and the Parker-Couzens motor coach bill was not upon it. Thus another setback is given to a piece of legislation which is widely desired.

The reason for the elimination of the regulatory bill from the Senate program apparently was the likelihood of extended controversy over it when it came before the Senate. So many amendments have been tacked on to the original bill as to make it quite a different measure from that which had been sponsored by the original advocates of this legislation.

From the standpoint of the railways, the bill, in the amended form in which it would have gone to the Senate, is quite undesirable in certain important features. In the House of Representatives an amendment had been inserted directing the commission to give consideration to another applicant for a certificate to permit motor coach operation in interstate service whenever the only existing service on a given route is furnished by a company connected with a railway. During consideration of the bill by the Senate committee a substitute amendment was included providing that the absence of motor vehicle service or of actual competition on any route should be considered sufficient evidence that public convenience and necessity would be served by the granting of another certificate. In other words, the House amendment would invite free-for-all competition over any route served by a railway-operated motor coach line, while the Senate substitute amendment would invite free-for-all competition on many more motor coach routes.

The regulation of intrastate motor coach lines, as carried out by most of the states, has been on a different basis. In intrastate service operating certificates usually

convey to the holder more or less of a monopoly of the privilege of operating motor coaches over the routes covered. As a result of this, railways desiring to effect operating economies and to improve the service offered their patrons by substituting motor coach service for railway service or by co-ordinating motor coach service with passenger train service, have often been compelled, as the only means of doing so, to purchase the lines and secure the transfer of the certificates of independent operators already covering routes paralleling railway lines. Fancy prices have been paid in a number of instances for such independent lines; yet under this amendment of H. R. 10288 the right to provide intrastate service without being harassed by unnecessary competition, which the railways have secured at no small expense, would be nullified to some extent where intrastate routes are also interstate routes.

The Senate committee also adopted another amendment to the bill, prohibiting a consolidation or acquisition of control involving a motor carrier where one or more of the parties are engaged directly or indirectly in the transportation of persons by railroads. Five members of the Senate committee filed a minority report recommending that the bill be amended by striking out the provision requiring the showing of public convenience and necessity in application for a permit to operate motor coaches in interstate service. The position was taken that the demand for such a provision comes from the present operators of motor coaches, and that there is no such demand from the public.

These and other amendments to the original bill would appear to make it substantially less desirable from the standpoint of the railways and other motor coach operators. Furthermore, there appears to be no sound reason for the inclusion of some of these amendments, particularly those apparently intended to hamper the railways in their efforts to co-ordinate motor coach service with railway service. Such amendments have the appearance of having been included, not so much for any constructive or desirable purpose, but for the purpose of baiting and crippling the railways.

Regulation of motor coach lines operating in inter-

state service is, of course, desirable, from the standpoint not only of existing operators of such service but also of the public, which deserves the same protection in patronizing interstate lines which it enjoys in patronizing regulated intrastate lines. But the co-ordination of railway and highway service, which can best be carried out only when the two kinds of carriers whose service is being co-ordinated are entirely or at least to some extent under the same management, is likewise desirable. To the extent that H. R. 10288 in its amended form would hamper the carrying out of a nation-wide plan of motor vehicle and railway co-ordination, the failure of the amended bill to be enacted at this session of Congress may not be entirely unfortunate.

For five years steadfast efforts have been made to secure the passage by Congress of legislation which would regulate interstate motor coach lines. It is hoped that this goal will be attained as soon as possible, but from some standpoints it would appear to be better that there be no interstate regulation for another five years, rather than to have it sooner in such form as would obstruct rather than promote the co-ordination of railway and highway service.

Atlantic City Meeting of Motor Transport Division

THE next meeting of the Motor Transport Division of the American Railway Association is to be held at Atlantic City from Wednesday to Friday, inclusive, June 18 to 20. At the same time, the Mechanical and the Purchases and Stores divisions of the A.R.A. will be holding their meetings at Atlantic City, while a comprehensive exhibit of railway and highway equipment will be presented by the Railway Supply Manufacturers' Association.

There is reason to hope that the Atlantic City meeting of the Motor Transport Division will be the most successful which it has ever held. More attention is being given than ever before to the development of a program which will be of direct interest to a large number of railway officers. Regional committee chairmen of the division met in Chicago over a month ago to make final preparations while members of the general committee of the division met with Mr. Aishton in Chicago last week to make additional plans and arrangements.

The feeling has been manifested in some quarters that the Motor Transport Division and its proceedings have not been sufficiently attractive to large numbers of railway officers. It has been said that the programs of previous meetings have left something to be desired in the way of general and direct interest to officers of railways concerned in one way or another with railway motor vehicle operation or competitive motor vehicle operation. Perhaps too much has been expected of

the division in the past; it is still young and has been handicapped in its progress to some extent by opposing views of railway executives relative to motor transportation. The way is being cleared, however, for a larger and more constructively functioning division. The first evidences of this are expected to be seen at Atlantic City, and the assurance can now be given to railway officers in operating, traffic, mechanical, purchases and stores and other departments that they will hear at the Atlantic City meeting reports and discussions of direct and vital interest to them and their railways.

The Problem of Safety

MOTOR coach transportation of passengers is getting a bad name in some sections of the country, as a result of the widespread publicity given to one or two unusually tragic accidents in which the lives of a number of motor coach passengers have been lost. Some accidents occur as the result of causes over which the driver or the management of the company involved have little or no control. The responsibility for other accidents, unfortunately, can be placed squarely upon the company or its employees. Some motor coach accidents involve the equipment and employees of irresponsible, fly-by-night operators. Others put a black mark on the record of responsible, ably-managed companies. Regardless of their nature, however, all accidents are deplorable, not only from the standpoint of loss of life or injury to the passengers and employees, but also because they cause the traveling public to question the safety of motor coach transportation in general.

In view of present traffic conditions on the highways, some accidents involving motor coaches are almost inevitable, but other accidents of the kind in which motor coaches have been involved on several occasions are entirely avoidable. It is difficult, for example, to conceive of an accident in which a motor coach is struck by a train at a grade crossing, particularly where the view is unobstructed in both directions, as being unavoidable. Yet such accidents have occurred, and much too frequently.

Some motor coach lines are able to operate month after month and year after year without a single serious accident and without injuring or causing the death of a single passenger. They operate under the same conditions as other companies having accident records which are not nearly so good. Luck may play some part in the safety record, but management plays a much larger part. If the management of a motor coach operating company insists that the equipment be properly and consistently maintained in good working condition, and that its drivers without exception observe to the letter all operating rules designed to promote safety, accidents involving its motor coaches, as is shown by the experi-

ence of the lines with the best safety records, will become few in number and minor in nature.

The railways have earned a splendid reputation for safeguarding the lives of their passengers. They did not have this reputation twenty years ago, and it has been earned by tireless efforts to improve plants and personnel. If motor coach lines are ever to approach the railways' record for safety, the same close attention to accident prevention must be given by their managements as is given by the managements of railways.

What L.C.L. Shippers Want

WITHIN recent months several railways have undertaken new departures in l.c.l. freight transportation, with results which should be significant to railway officers. For a number of years motor trucks have been used in the transportation of l.c.l. freight, replacing freight trains. Not until recently, however, have motor trucks been used by railways to extend their freight service beyond their railway lines. Certain railways have now come to the conclusion that modern conditions and competition justify their devising a new system of handling l.c.l. freight, which would extend substantially the service they have given such shipments in the past. Reports concerning these operations indicate that they are uniformly successful, so that from them certain conclusions may be drawn as to what the shipper of l.c.l. freight wants in the way of transportation service.

Store-door collection and delivery, less rigid packing requirements, late departure from the point of shipment and early delivery at destination, seem to be among the principal desires of l.c.l. shippers. An industrial traffic manager, in an article which appeared in the March 22 issue of the Motor Transport Section of the *Railway Age*, said, "The truck lines are taking traffic away from the railroads because truck service is better and because truck rates are lower. We honestly believe that if the railroads, by co-ordinating their rail service for their line haul with motor trucks for collection and distribution, or by any other means, will come anywhere near meeting the inducements held out by the truck carriers, they can hold what traffic they have and to a very large extent recover what they have lost. But to do so, they will have to make some almost revolutionary revisions in their rules, cut out a great deal of the red tape now attendant upon a rail shipment, and above all else undergo a general speeding up of a merchandise service which in many instances is now so far behind that of the trucks that it isn't even in the running."

These appear to be the things which the shippers of l.c.l. freight want. Whether the railways will give the shippers what they want in the way of transportation service, and by the same token, whether the railways

will continue to hold their l.c.l. traffic or see it won away from them by competitive truck lines, are questions which can be decided only by each road for itself.

Uniform Accounting for Motor Transport

ACCOUNTING practices for motor transport enterprises are far from the standard of uniformity attained by the railroads. It is true that much has been done, particularly by the American Electric Railway Association, in promulgating and securing the adoption of a uniform system of accounting for motor coach operations. Yet what contribution have the steam railroads' highway subsidiaries made to motor transport accounting and what contribution can they make?

Uniform accounting for motor truck operations is practically non-existent. The reason is primarily that the accounting requirements of a contract carrier are entirely different from those of a common carrier—and most motor truck operations come under the former category. Railroad truck operations, of course, belong to the latter. Common carriers of freight by highway have not attained the prominence and the cohesiveness of the motor coach lines, and the likelihood of their doing so at any early date seems remote. If accounting for freight trucking by railroad subsidiaries is to achieve any degree of uniformity, therefore, the initiative will apparently have to come from the railroads.

Uniform accounting for highway operations should be decidedly helpful in enabling the railroads to learn more from each other's experience—knowledge difficult of attainment when the language the figures speak is indefinite and not easily understood. What can be done about it? The subject is highly technical and obviously is not one with the details of which the generality of the delegates to the meetings of the Motor Transport Division will care to concern themselves. The accountants of railroad motor transport subsidiaries are, for the most part, railroad accountants and, also probably for the most part, members of the Railway Accounting Officers Association. That association would doubtless be willing to co-operate with the motor transport operating officers in lending its aid in developing and perfecting uniform accounting for highway operations.

What do motor transport officers need from an accounting system? Would it not be helpful if the accounting officers of the various motor transport subsidiaries should attend the meeting of the Motor Transport Division at Atlantic City in June and learn at first hand from the operating officers just what degree of accounting standardization and refinement appear desirable? Such would be a logical first step prior to referring the subject to the Railway Accounting Officers Association for their advice and assistance.

DOOR TO DOOR OVERNIGHT MERCHANDISE FREIGHT EXPRESS SERVICE



AT REGULAR RAIL
FREIGHT RATES



Cover of Two-Color Folder Advertising New Service

WITH the construction of hard surfaced highways and the mechanical development of the motor truck, the growing tendency of the small merchant to invest as little of his money as possible in dead stock has made necessary the fast transportation of small orders from supply centers to the trade territory. Under such favorable conditions, truck lines have grown almost overnight, practically unrestricted by law as to rates, schedules or territory, and the remunerative less-car-load business so long enjoyed by the railroads has begun to disappear. The convenience of the store door pick up and/or delivery service offered by the truck lines has worked to the upbuilding of l.c.l. traffic, and this new form of competition has made serious inroads into the freight traffic revenue of the railroads.

It was to meet this competition on a common ground that the Texas & Pacific Motor Transport Company was conceived and organized to operate along the lines of the Texas & Pacific Railway. Actual operation began over a small portion of the line in the latter part of 1929, but since then has been extended to include all stations on the railway within the state of Texas. The experiment was undertaken after the conclusion had been reached by the management of the Texas & Pacific that a fair share of this l.c.l. traffic could be won back to the rail line by offering to shippers a co-ordinated rail-truck service, combining the

The railways are encountering more and more competition from independent truck lines for l.c.l. freight. Deep inroads have already been made in this part of the railways' business, and the competition is becoming increasingly severe.

Store door collection and delivery, and overnight deliveries between points as distant as two hundred miles or more appear to be the principal attractions of motor truck transportation. These are now offered by the Texas & Pacific, through a subsidiary, the Texas & Pacific Motor Transport Company, which has been highly successful in winning back to the railway traffic which it had lost to its highway competitors.

The purposes of the Texas & Pacific Motor Transport Company, its operating methods and something of the results that it is securing are told in this article by T. E. Huffman, general freight agent of the motor transport company, to whom belongs a large measure of the credit for the success of his company's operations.—Editor.

Winning Traffic Back from the Truck Lines

*T. & P. subsidiary develops business through co-ordinated operations—
Store door service attractive*

By T. E. Huffman
General Freight Agent, Texas & Pacific Motor Transport Company

convenience of the motor truck with the all-weather dependability of rail transportation, which without considerable further investment would provide a fuller utilization of the already existing rail and terminal facilities.

It was known that a considerable amount of the expected business would be handled by the railway through the medium of its already existing service without increased out of pocket expense.

Principle of Operation

The principle upon which the motor transport company was based required:

- (1) Provision of motor truck store door pick-up service;
- (2) Transportation, in set-out merchandise cars by rail, from station of origin to station of destination;
- (3) Early morning store door delivery, by motor truck, at destination; and
- (4) Rates which would meet the competition of established truck lines.

At the outset, it was believed that it would be necessary for the motor transport company to purchase and operate motor trucks for the pick-up and/or delivery service; however, it was found this could be satisfactorily avoided by the company's entering into contracts with reliable transfer companies in various cities and towns served by the motor transport company, whereby the latter would perform the actual trucking of freight from the shipper's place of business to the railway freight station, and vice versa at destination.

Thus the entire service—i.e., pick-up, line haul, and delivery is accomplished, not by making new investments or providing new facilities, but by deriving greater use from investments already made and from facilities already in existence.

An important consideration is the fact that contract truck draymen, who are handling

the pick-up and/or delivery service on a tonnage basis, become, for their own advantage, solicitors for the motor transport company, with a knowledge of the local situation which is of material benefit in locating and securing business.

For the operation of the motor transport company, the employees, freight stations and other facilities of the Texas & Pacific Railways are considered joint facilities, and the closest possible co-ordination of the rail and motor transport operations is thus assured.

In practice, upon being advised by a shipper of business to be routed via the motor transport company, the local freight agent instructs the transfer company, whose truck calls at the shipper's place of business and drays the shipment to the outbound freight station of the railway company. The driver of the truck issues to the shipper, at his place of business and at the time the shipment is received by him, a motor transport company bill of lading, and the shipper's part of the transaction is thus quickly and conveniently consummated. The motor transport company, being a common carrier, binds itself to perform a complete service from store door at the point of origin to store door at the point of destination.

For the convenience of large shippers of less-car-load freight, regular calls are made by pick-up trucks at specified times, with such extra trips as may be necessary for later shipments. The closing time of outbound stations has been extended at some points to 6 p.m., to permit the pick-up and dispatch of freight which is not ready until late in the afternoon, this closing hour being based upon local conditions and upon the time of rail departure necessary to insure early next morning delivery, which is so strong a factor in the successful solicitation of this traffic.

The regular expedited freight schedules originally designed for handling of car-load business were changed as necessary to meet the needs of overnight movement of the

Provisions of Agreement with Draymen

This Agreement made and entered into on this the day of 1930, by and between of hereinafter styled Drayman, party of the first part, and The Texas and Pacific Motor Transport Company, herein-after styled Transport Company, party of the second part.

WITNESSETH

For and in consideration of the stipulations hereinafter set forth, the Drayman agrees to haul to and/or from the freight depot of the Transport Company, in the City of and pick up and/or deliver within the city limits of the said City of all less-than-carload shipments of freight moving under bills of lading and way-bills of the Transport Company, consigned by and/or to consignees within said city limits. The Drayman shall receive as compensation cents per hundred (100) pounds for all such freight shipments transported by Drayman, same to be paid upon receipt of monthly statement from the Drayman, said statement to be checked, audited and paid by the Transport Company as early as practical after the receipt thereof.

The Drayman agrees to furnish sufficient and suitable motor truck equipment to promptly move said shipments to or from the said freight depot, such movements to be made in conformity with directions of the proper officer of the Transport Company, and with promptness and dispatch, and so as to connect with the schedules of merchandise cars of the Transport Company and in any event within two (2) hours after shipments are available to Drayman. The Drayman further agrees to make collection of all freight charges as per freight or expense bills to be made up and delivered to him by the Freight Agent of the Transport Company, the originals of which he will sign and deliver to consignees as receipts for such collections. All such collections must be remitted daily to the Freight Agent of the Transport Company.

The Drayman shall safely haul, transport and deliver such less-than-carload freight shipments at its own sole cost and risk, and in the event of any loss, damage and/or delay thereof or thereto, Drayman shall pay to the Transport Company the amount of such loss and damage upon presentation to Drayman of owner's claim properly supported, or shall reimburse the Transport Company for any payment made by it on such account direct to the claimant. The records of the Transport Company as to the condition of the shipments when delivered by or to the Drayman shall be conclusive as between the Transport Company and the Drayman.

The Drayman shall furnish a surety bond in the sum of Dollars, satisfactory to the Transport Company as to form and surety, guaranteeing the faithful performance by the Drayman of this contract.

Either of the parties to this contract may cancel same by giving the other party hereto written notice of such intention thirty (30) days in advance of the date when the cancellation is to take effect, provided: that the failure of the Drayman to perform the service stipulated herein or to comply with the conditions hereof in a manner satisfactory to the General Freight Agent or other proper officer of the Transport Company shall be deemed sufficient cause, at the election of the Transport Company, for the immediate cancellation of the contract without advance notice; and provided, further, that in the event the Transport Company should decide to provide its own trucks and itself perform the service herein contemplated to be performed by the Drayman, this contract may be terminated on thirty (30) days written notice given by the Transport Company to the Drayman; and provided, further, nothing

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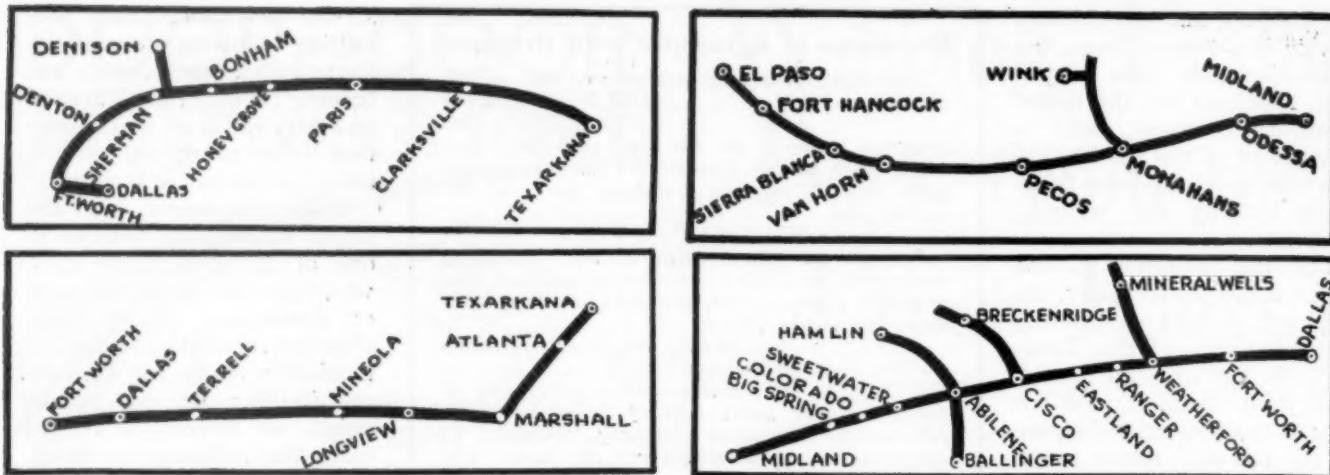
set-out merchandise cars, permitting following morning delivery in a trade territory extending some two hundred and fifty miles in each direction from producing centers along the Texas & Pacific.

L.c.l. shipments for the larger stations are handled in one or more exclusive cars, which are set out at the point of destination by the merchandise schedule, and are immediately ready for delivery of freight; or, at nearby points, for delivery of freight early the following morning. Smaller stations are served by way cars, handled in co-ordinated local service, the merchandise train setting out the way cars at the initial terminal of the local train, the freight being unloaded at various destinations by members of the local train crew.

Where practicable, the freight is unloaded direct from the cars into trucks for purposes of delivery. It is checked by the station forces in the usual manner, the customary railroad freight bills having been abandoned in favor of the multi-part combination way-bill, freight bill, truckman's receipt, delivery receipt and station record, which is made out by the forwarding agent and accompanies the shipment. Thus all necessary billing documents are ready for the contract drayman immediately upon arrival of the freight at destination.

The motor transport company receives for its services rates that equal or approximate the rates charged by established truck lines, and operates under the Western Classification, with its tariffs duly filed, and is a common carrier. For a small additional charge, C.O.D. service is provided, thus offering to the shipping public "express service at freight rates". In so far as the public is concerned, the railway company does not enter into the transaction at all. The railway merely transports the freight from the station of origin to the station of destination, for the account of the motor transport company.

Effective on May 1, 1930, by a ruling of the Railroad



The Four Divisions of the Texas & Pacific Motor Transport Company's Operations in Texas

(Agreement, Continued from Preceding Page)
herein contained shall be construed as obligating the Transport Company to continue its said business if for any reason it should decide to discontinue same.

Witness our hands at
the date and year first above written.
.....

By
THE TEXAS AND PACIFIC MOTOR TRANSPORT CO.
By
President

Commission of Texas, Class A truck lines, which are the lines operating between established termini on regular

THE TEXAS AND PACIFIC MOTOR TRANSPORT COMPANY							Form 478	
FREIGHT WAYBILL							PART 1	
CAR INITIALS AND NUMBER			C. O. D.		DATE		WAYBILL NO.	
			Amount \$					
To Station	State		Origin Drayage Payment		From Station	State		
CONSIGNEE AND ADDRESS			Destination Drayage Payment		FULL NAME OF SHIPPER			
Indicate by symbol in column provided ★ how weights were obtained for L. C. L. Shipments only. R —Railroad Warehouse Scale. S —Shipper's Agreement or Tested Weight. E —Estimated—Weigh and Correct.								
DESCRIPTION OF ARTICLES AND MARKS		AUDIT	★	WEIGHT	RATE	FREIGHT	ADVANCES	PREPAID
Destination Agent's Freight Bill Date 19 No. Total To Collect \$ Destination Agent Will Stamp Herein Station Name and Date Received								

A Multi-Part Combination Way-Bill, Freight Bill and Receipt Is Used

Part 1 is the Freight Way-Bill; Part 2, the Carrier's Memo; Part 3, the Freight Bill; Part 4, the Delivery Receipt;
Part 5, the Station Record; and Part 6, the Copy.

schedules, assessing charges for shipments under published rates, must assess rail tariff classifications and rates, thus placing competition between them and the rail lines on a basis of service performed rather than on a basis of price alone. Affording as it does all of the advantages of pick-up and delivery at "store door", with overnight service, and in addition financial responsibility and dependability, the motor transport company is on excellent ground in soliciting freight in competition with the truck lines. There are also Class B trucks, which do not operate with regularity or between established termini, and which may transport freight at any price they may elect; but these factors of their operation preclude the possibility of any considerable tonnage moving via Class B trucks.

No Competition with Railway

Careful study of the traffic situation was made with the idea of avoiding competition for l.c.l. freight business between the railway and the motor transport com-



How the Service Works Is Shown Graphically on This Page from the Advertising Folder

pany. Instead, the operations were devised on such schedules as to compete with Class A truck lines for business which had been previously taken from the railway company. The fact that the business secured by the motor transport company has not resulted in a decrease in that of the railway company indicates that this added traffic has been won from competing truck line companies, and that the large shippers and receivers of l.c.l. freight prefer to patronize a reliable organization which observes the regulations of the railroad commission, and the rates, rules and practices of which are, therefore, consistent and reasonable.

The gratifying patronage of the motor transport company by the shipping public in the territory of its present operation, which includes territory served by Class A truck lines, seems to warrant the assumption that its activities will be further extended in compliance with the popular demand.

Why Engines Wear Out*

By G. P. Texada

Standard Oil Co. of California

THE primary purpose of lubrication is to reduce friction and wear between moving surfaces of a machine, usually spoken of as bearing surfaces. Without a lubricant the friction would be prohibitive and the surfaces would soon destroy themselves. Perfect lubrication is a complete separation of bearing surfaces by a film of lubricant, with no metallic contact whatever and the only friction present being the actual fluid friction inherent in the lubricant that forms the film. This condition of full film lubrication is of course highly desirable, as the fluid friction of the oil film is small and there could be no wear of the bearing surfaces. With full film lubrication at all times during engine operation, the life of the engine would be indefinitely prolonged.

But we all know that engines do wear out and that crankshaft bearings, pistons, etc., become looser and looser as engine operation is continued. In some cases the wear occurs at a rapid rate, while in others long and continued operation is possible before replacement or repairs are necessary. But sooner or later something must be done to compensate for the wear of bearing surfaces.

It is therefore obvious that there must be some periods of engine operation at least when full film lubrication does not exist and when there is more or less metallic contact of bearing surfaces. Otherwise engines would not require overhauling or replacement.

The piston rings sliding up and down in the cylinder are more or less in contact with the cylinder walls at all times. Whenever the engine stops, most of the oil on the cylinder walls and other bearing surfaces drains away, leaving them without sufficient oil for full film lubrication when next the engine is started. It takes some time for the oil circulating system to re-establish a full supply on all bearing surfaces. In the meantime the surfaces are more or less in contact with increased friction and wear.

Maximum pressures in the major bearings of an automotive engine are fixed by the gas pressures acting on the head of the piston, and by loads imposed by the inertia forces of reciprocating parts and the centrifugal forces of rotating parts.

The ability of an oil to withstand pressure between bearing surfaces depends upon the body, higher pressure indicating the necessity for more body or viscosity, if full film lubrication is to be maintained.

As the body or viscosity of all oil is affected by changes in its temperature, this factor is important in determining the oil to be used. Higher speeds and pressures have resulted in higher maximum operating temperatures, which indicate the necessity of lubricat-

(Continued on page 1277)

* From a paper presented before the Oregon Section of the Society of Automotive Engineers.

Dispatching Plan of Motor Haulage

*Definite instructions eliminate misunderstandings
between dispatcher and drivers*



Trailer Operation at the Bushwick Station of the Long Island

THE Motor Haulage Company, Inc., operates one of the largest fleets of motor trucks in New York, specializing in an individual contract service to large commercial organizations which require a constant distribution of products in the New York metropolitan area, and to railroads and steamship lines in the movement of transfer freight.

In their commercial contracts, the Motor Haulage Company assumes responsibility for all of the motor transportation requirements of the customer, becoming in effect, the motor truck transportation department of the customer. The vehicles, in some cases, are painted and lettered with the name and trade-mark of the company in whose service they are regularly operated.



The Dispatcher's Office at 18 Amity Street, Brooklyn

The principal railroad service is that for the Long Island Railroad, in which freight is transported between the various freight transfer points in Brooklyn and Manhattan, reducing yard congestion and eliminating the use of car floats between Pier 22 in Manhattan and Long Island City. Trucks are also used to handle the l.c.l. business on several branch lines, to reduce the number of peddler cars operated and to allow better loading of through cars at consolidation points.

Truck Service in Lieu of Lighterage

For other railroads, steamship freight, particularly that of foreign origin, is transported from the pier to a nearby railroad siding, from which cars are loaded for western cities. This service is in lieu of railroad lighterage and expedites the movement of this class of freight.

As these cars are ordinarily drilled at 5:30 p.m., the motor truck is particularly useful in giving quick service on shipments received late in the day, which, by the old method of using the large capacity but slow moving lighterage float, would be held over 24 hours. A railroad officer in charge of one of these services has estimated that, for shipments up to 50 tons, it is cheaper to handle this class of freight by motor truck than by steam lighter.

The Motor Haulage Company is also a receiving agent for the National Freight Company, making daily deliveries to the forwarding stations of this operator.

The two most important factors in supporting these contract services are, the method of dispatching and controlling the movements of the vehicles, and the system of maintenance whereby the vehicles are kept in the best possible operating condition.

Defects cropping up during the day, reported by the drivers in writing, are promptly remedied by a night mechanic and a frequent two-day inspection-and-repair period, keeps the vehicles up to a high operating stand-

ard. This system reduces the number of road jobs to a minimum.

The movements of the trucks during the day is under the supervision of a dispatcher, located in the headquarters building at 18 Amity St., Brooklyn, N. Y. On the large contract operations a foreman is placed in charge, who looks after all requirements of the customer and directs the movement of the vehicles, but is under the orders of the chief dispatcher. The foremen keep in frequent communication with the dispatcher so that extra equipment can be quickly supplied to them if necessary; and, on the other hand, if they have no work for some of the equipment which was assigned to them, the dispatcher can usually place it with some other foreman who needs it. The drivers sent on small jobs or to isolated districts report directly to the dispatcher, notifying him of all delays encountered and also when they are without a load. When giving the driver an assignment, the dispatcher makes a note of the probable time which it will take him to complete the delivery, and unless the driver reports a delay, the dispatcher, in the mean time, will have arranged with one of the foremen or with another customer for the use of the truck, and instructs the driver accordingly. The drivers have definite instructions to call the dispatcher when they have completed their assignments or when they are delayed, notifying him where they can be reached on the telephone.

Daily Control Sheet

In laying out the day's work, the dispatcher uses a daily truck assignment sheet, a section of which is shown in an accompanying illustration, upon which is placed the driver's name, his truck number, the time of leaving the garage and assignments for the day. This dispatching sheet is made up at 5:00 p.m. for the following day, and is based upon orders as to work to be done the following day received at that time from the foremen or from the customers. Each foreman obtains from the customer information, as to the next day's requirements for haulage equipment, in time to send a mem-



Foreman's Field Office at Bush Terminal, Forty-Fourth Street, Brooklyn

orandum to the dispatcher. If no foreman is on the job, arrangements are made with the traffic department of the customer to give his requirements for the next day directly to the dispatcher. This allows the dispatcher to instruct each driver as to the time he is supposed to report at the garage for work the next morning. Calls received during the day for additional equipment are kept on a daily dispatching record and as they are taken care of, are checked off. Sufficient time is given to enable the truck to report to the respective pier, warehouse or loading platform as requested by the customer. To avoid misunderstandings, a written note is posted to the drivers daily report sheet, instructing him as to the time and place to report for work and what he is to do when he gets there.

When trucks are out of service for repairs, the shop maintenance inspector sends the dispatcher a slip at 5:00 p.m. with the numbers of these vehicles noted thereon, together with a list of those which are scheduled to



Truck Used in L. C. L. Service on the Long Island

A—Daily Assignment Form which is the Basis of the Dispatching System. This is Kept Before the Dispatcher at all Times and Entries are made as the Drivers are Assigned. B and C—Driver's Daily Report Covering One Assignment. D—Form Kept by the Foremen Giving a Record of the Tonnage Carried or Time Consumed, for Auditing. E—Orders Received During the Day are Entered and Checked Off as They are Assigned to a Driver. F—Driver's Instruction Ticket.

come in for mechanical inspection. The equipment is divided into four fleets and, usually one vehicle is selected from each fleet to come to the shop for inspection. The dispatcher selects an unloaded vehicle which will cause the least inconvenience to the operating schedule.

The principal function of any dispatching system is to eliminate idle time, and this feature has been carefully worked out by the Motor Haulage Company. Any driver or supervisor having idle equipment calls the dispatcher for instructions. Unless other arrangements have been made, the dispatcher gets in touch with the foremen or with customers who may be short of equipment or have some extra work to do.

Driver's Regulations

It is a policy of the company to give a driver the same truck every day unless it is in the shop for repairs. This has resulted in the drivers taking better care of the equipment, as they will seldom abuse a vehicle which they know they will have to operate until it is tied up for repairs. Customers also request regular drivers on their particular operation.

Drivers are strictly responsible for their loads, and they give and receive a receipt in every instance. They are authorized not to accept slack or damaged packages, accept no cut receipts or return refused goods unless authorized by the foreman or dispatcher. If a truck must remain loaded overnight in the garage with a valuable load, it is sealed by the driver, who places wire seals over every knot of the tarpaulin and tail-gate ropes.

In the event of mechanical breakdown on the road the driver is instructed first to call the dispatcher, giving him all details. The dispatcher then turns the call over to the shop foreman and a mechanic is sent out to make emergency repairs if possible. If the truck will be delayed more than 30 min. the mechanic again calls the dispatcher who arranges to transfer the load to another truck or otherwise disposes the load to result in the least inconvenience to the customer.

Drivers call the night foreman at any time up to 12



Loading Lighterage Freight



An Aluminum Trailer at the Flatbush Ave. Station of the Long Island

p.m. to get their reporting time for the next morning and as they leave the garage in the morning they are checked out. This list is later compared with the dispatcher's sheet.

Why Engines Wear Out

(Continued from page 1273)

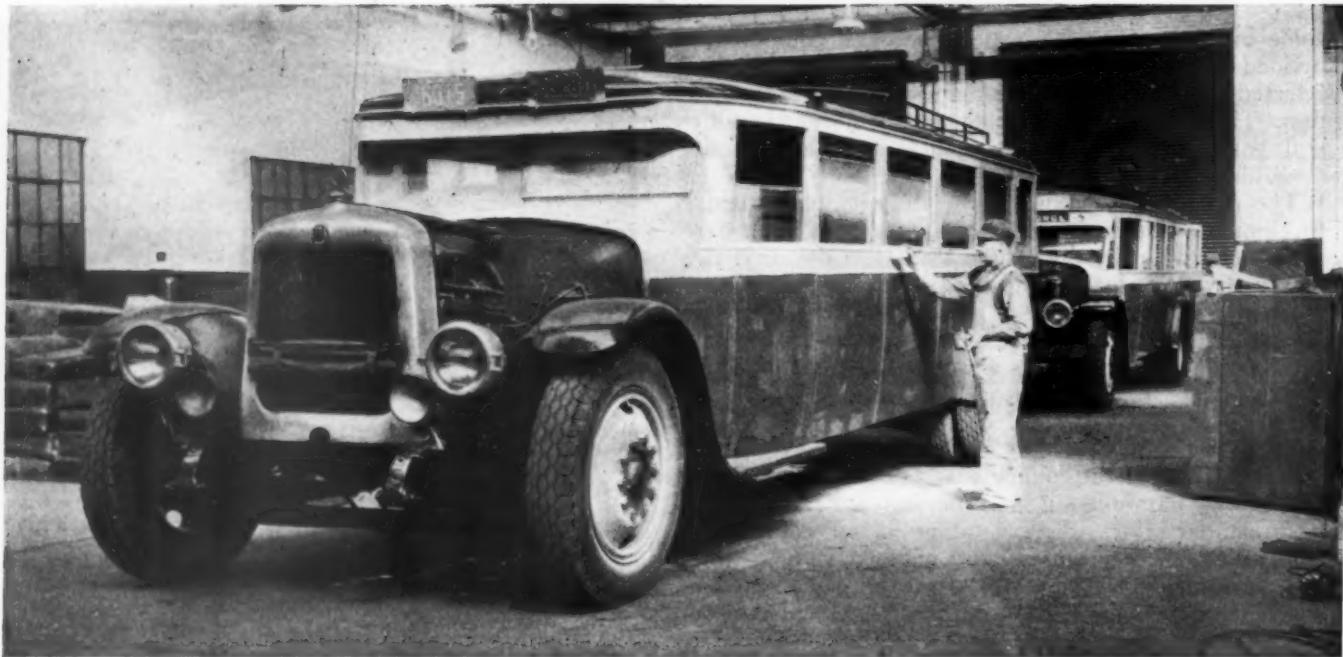
ing oil having greater body, particularly at the high range of temperatures, in order to successfully withstand pressures to which the film in the bearings is subjected during engine operation.

The lubricating oil film on the cylinder walls and any surplus oil that may get up into the combustion chamber is directly exposed to the hot gases resulting from combustion of the fuel mixture. The exposure of oil on the cylinder walls is intermittent, the film being rapidly covered and uncovered as the piston moves up and down in the cylinder, but any oil above the upper limit of piston travel is continuously exposed.

The temperature of the gases in the cylinder during the power stroke of the piston is high—ranging from 750 degrees to 3500 degrees Fahrenheit. Oil continually exposed to such temperatures will take fire and burn, and it would seem that any oil exposed to these temperatures in the cylinder would be immediately and totally destroyed. This does not occur, however, because exposure is intermittent and because the oil film is resting on a comparatively cool surface.

If any decomposition occurs the change in affected oil is from liquid form to solid or gaseous form. Whenever any petroleum product is decomposed a carbonaceous residue is formed, ordinarily spoken of as carbon deposit. Where the oil is of such character that any of its component parts react to high temperatures in this manner, long continued operation causes the accumulation of objectionable carbonaceous deposits or residue resulting from such decomposition.

It will be evident that it is desirable to use an oil that will react to high temperatures in the cylinder in only the first way; that is, the gasification of a very small part of the exposed film. With such an oil, carbon deposits in the engine resulting directly from decomposition of lubricating oil will be largely eliminated.



Applying the Undercoat

Production Methods Applied to Body Repair and Painting

*Philadelphia Rural Transit advocates periodic overhauling
and repainting—Results in longer life and increased
patronage due to attractive appearance*

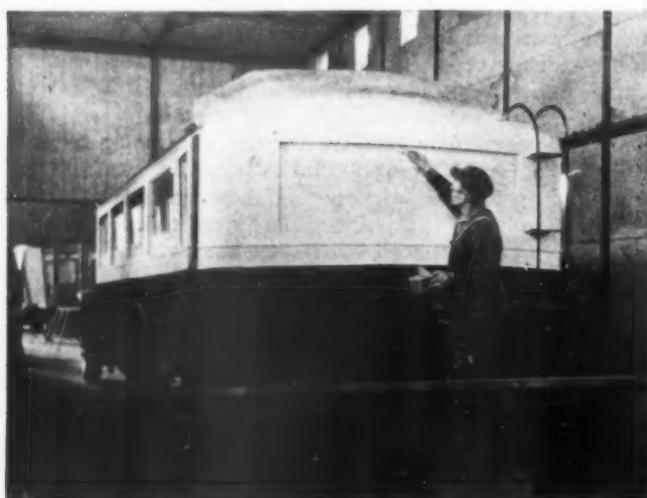
THE Philadelphia Rural Transit Company, operated by Mitten Management, has found that motor coach bodies, if they are to be kept in good condition, need to be periodically overhauled, reinforced where weakness has developed, and repainted. Bodies are overhauled on a basis of 100,000 miles of service, and are

repainted at intervals of approximately 18 months. The increase in traffic in the summer months requires the use of all of the equipment; consequently, the body reconditioning is done between the months of November and April.

New body equipment sometimes does not stand up under hard service and frequently annoying squeaks and rattles develop while the motor coach is yet comparatively new. This necessitates the use of added supporting members to the framework or of more securely fastened braces or reinforcements. Frequently the use of a steel support which extends to a greater length and is secured by through-bolts rather than by wood screws, is all that is required. Floors occasionally give trouble by spreading apart, thereby weakening the joints of the lower frame members. Any lack of rigidity at this point tends to increase rapidly, and in time results in the whole framework becoming loose.

Progressive Movement Through Shop

Production methods are followed as closely as possible. The coach is started at one end of the shop where the body and chassis are thoroughly steam cleaned to remove all grease, dirt and loose paint, using an Oakite solution. Care is taken to thoroughly wash off all traces of the cleaning material with cold water, while the vehicle is on



Window Frames are Finished by Hand

the wash stand. It is then run to the line of pits which extend the length of the shop and moved progressively along as the various removal and assembly operations are performed.

The interior panels of pantasote are removed and are used as templates for the new 16-gage aluminum panels. To prevent rumbling and to eliminate rattles, the side of the panel which is placed next to the frame members is covered with burlap applied with linoleum cement. The exterior aluminum panels are also removed and straightened. If they are torn or broken, they are welded and afterward made smooth by grinding. If too short, as occasionally happens when some alteration has been made, a section is welded on and refinished to a smooth joint.

With the framework exposed, it can be easily inspected and reinforcements added where necessary. Steel angle braces $\frac{1}{4}$ in. by $1\frac{1}{4}$ in. are fitted to each post and floor intersection, and fastened by at least four $\frac{3}{8}$ in. carriage bolts. The old construction was held by wood screws. An additional wooden strip is inserted under the steel reinforcement to serve as a window stop and also to give better support to the seat rail, which is now supported by bolts rather than wood screws.

To prevent rumbling of the inside metal panels, a vertical wood reinforcement of $1\frac{1}{8}$ in. by 2 in. stock, placed on 12 in. centers, is run between the upper and lower belt rails and the panels are firmly fastened to these strips by wood screws.

Wood Members Set in White Lead

The wood frame members and reinforcements are produced in quantity in the woodworking shop using wood or cardboard templates. After being cut to shape the parts are dipped in a tank of wood preservative and allowed to become thoroughly dry before installation in the body. Comparative tests have been made by exposing treated and untreated wooden samples to outdoor conditions, and it has been found that the treatment adds to the weather resisting qualities. When these wood members are placed in position in the body, they are set in a heavy coat of white lead and oil. Both wood and



Filling in Rough Spots in Preparation for the Undercoat

steel reinforcements are slushed with an oil primer after being bolted in place.

To prevent the floor from spreading apart, a 1 in. by 5 in. ash stiffener is run between each body sill, and every floor board is fastened to this stiffener by a carriage bolt set in "Stickum" cement.

The front body post on the left side was of standard width and greatly interfered with the visibility of the driver. This has been removed and beveled, reducing the width of the blind spot from 4 in. to 2 in.

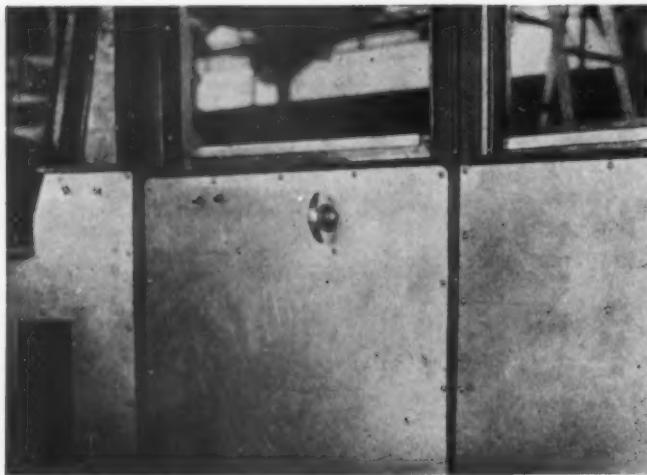
Extra bracing was required at the intersection of the dash and the front post blocks to insure rigidity. For this purpose, $\frac{1}{4}$ in. by 1 in. angle iron is bent and firmly fastened to the adjoining members. A section is cut out of the instrument panel to allow for greater movement of the hand brake lever.

Lacking an accessible place to carry tools, jacks, wiping rags, etc., a wood closet has been built at the right of the driver extending from the floor up to and under the instrument panel out of the way of entering passengers.

A drip channel is installed along the radiator tie rod and under the center hinge of the hood, to catch and



Exterior Panels are Repaired or Replaced as Found Necessary



Aluminum Sheets are Used for the Interior Panels

drain off any water which may splash through, preventing ignition trouble from this source. This channel is 4 in. wide and 3 in. deep at the rear end.

To prevent sagging, the hood is reinforced on the under side by a steel angle attached by copper rivets. Usually the hood support moulding is renewed to prevent the hood from jumping up on the cowl.

Mouldings Made Waterproof

Pantasote strips coated with white lead are placed under the mouldings to prevent wear and to make a water-proof connection. Several cases of rotted body posts were attributed to water leaking in under the aluminum panel mouldings. All mouldings are screw fastened.

Front and rear fenders are removed and stripped of all paint. They are straightened and, if broken, are welded and finished smooth. To facilitate removing the steering arm, a 3 in. round opening is cut in the left front fender apron and covered with a detachable cover. This saves the time of removing the fender when repairs are made to the steering post or arm.

All license plates are placed on the roof, as shown in the illustration. In this position the plates are kept clean and are less liable to be lost or stolen.

The wheel housings, inside the body, are covered on the sides and top with linoleum fastened by aluminum stripping.

After the body repairs have been completed, the motor coach is sent to the paint shop, which is laid out on a production basis the same as the repair shop. The

coach enters the east side of the building and leaves the west side when the work has been completed.

The body is first sanded and all grease is cleaned off, after which the panels are scuffed by hand. Pyroxylin-base paints are used exclusively. The first body coat consists of a metal primer applied all over. Any surface roughness is removed by spot puttying and glazing. An undercoat is then applied and sanded when dry. The third and last coat is of green or cream finishing enamel, put on either by hand or with a spray gun, depending on the amount of masking required. Frequently the time consumed in masking or protecting surrounding sections from the spray, takes more time than would be consumed in applying the paint by hand; consequently, it is a rule in the paint shop to never mask and spray where hand work alone would save time.

The disc wheels and hood are finished the same as the body except that they get two coats of enamel instead of one. Inside metal panels receive one coat of primer and one coat of black finishing lacquer, sprayed on. Wood-work is hand-finished with clear varnish. The roof is sprayed with one coat of slow drying varnish top-dress-



Additional Supports are Placed at Frame Intersections

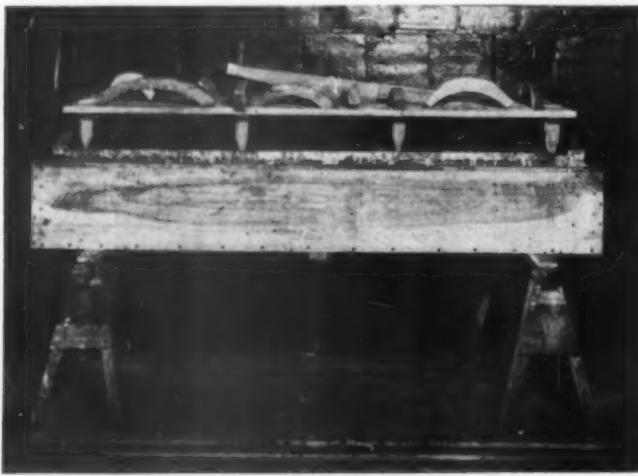
ing. The fenders are first primed, then given an under-coat and finally finished with one coat of black finishing enamel. A spray coat of asphaltum paint is put on the frame and under the fenders. Decalcomania transfers are used for all lettering and numbering, which is pencil varnished for protection. The radiator core is given a brush coat of lamp black and gasoline.

Before painting, the nickel parts, such as anti-window rattlers, grab handles, door control and spare tire holder are removed and sent out to be chromium plated. These are replaced after all painting has been completed.

Seats Are Repadded

The seats are removed in the body repair shop, to allow the interior panels to be replaced, and are sent to the upholstery department where the seat springs are renewed, the backs repadded and reformed so as to give a comfortable head support. The covering is replaced or repaired as found necessary. The upholstery shop also installs a canvas wind-flap which gives added protection to baggage carried on the roof.

The paint job is estimated to stand up about 18 months, at which time it is estimated that the color will have become dull and need renewal.



Wood Preservative Tank and Drain Rack

For Greater Safety In Highway Operations

Railroad Commission of California establishes rules and operating regulations designed to safeguard lives and property of the users of highway transportation, and to provide maximum comfort

THE Railroad Commission of California has promulgated a number of safety rules and operating regulations in a general order, designed to "assist materially in safeguarding the lives and property of users of public highway transportation." Acting on its own motion, the commission held hearings on the proposed rules and regulations, at which the principal operators of motor vehicles in the state were represented. Following these hearings, the safety rules and operating regulations were embodied in an order which was declared in force on April 21.

The most important of the safety rules requires that passenger motor coaches and motor trucks must stop at all railroad crossings; that passenger-carrying vehicles in service must be inspected daily; that no greater number of passengers than permanent seats are provided for shall be allowed on a motor coach, except in case of unexpected transportation demands; and that drivers of trucks or motor coaches must not work more than ten consecutive hours in any 24-hr. period, but that the hours of service may be spread over 15 hours, if there is sufficient idle time between trips for rest. The principal rules embodied in the California Commission's order follows:

Equipment

Speedometer.—Every motor vehicle used for the transportation of passengers shall be equipped with a standard speedometer which shall be maintained in good working order.

Windshield Wiper.—Every motor vehicle used for the transportation of passengers shall be equipped with an efficient power windshield wiper. All trucks operated by transportation companies shall be equipped with either a hand or power wiper. All wipers shall be kept in good operative condition at all times.

Skid Chains.—Every motor vehicle used for the transportation of passengers (except motor vehicles equipped with dual tires or balloon tires mounted singly), shall at all times carry a set of skid chains which shall be applied to the rear wheels whenever necessary.

Fire Extinguisher.—Every motor vehicle used for the transportation of passengers shall be equipped with a liquid fire extinguisher of a capacity and a design or type approved by the commission, and such extinguisher shall be kept in satisfactory operative condition at all times.

Mirror and Reflector.—Every motor vehicle shall be equipped with a mirror or reflector attached to and so located and

adjusted on such vehicle as to give the driver thereof a clear view of the interior of the car and of the highway directly to the rear of the vehicle.

Horn.—Every motor vehicle shall be equipped with a suitable horn or other similar warning device.

Turn Indicator.—Every motor vehicle operated by a "right hand drive" shall be equipped with a suitable signal properly installed so as to warn other motorists that the vehicle is about to stop or make either a right or left hand turn.

Tools.—Every motor vehicle used for the transportation of passengers shall at all times carry such tools as may be necessary to make usual and ordinary repairs while on the road, except vehicles used in urban service where extra equipment and repair cars are immediately available.

Extra Tires.—Every motor vehicle used for the transportation of passengers shall when leaving either terminus be equipped with at least one (1) serviceable extra tire, except vehicles used in urban service where extra equipment and repair cars are immediately available.

Exhaust.—The exhaust pipe of every motor vehicle used for the transportation of passengers shall be so installed as to fulfill the requirements of the California Vehicle Act; and further, the floor of any motor vehicle used in the transportation of passengers where exhaust is used for heating shall be so constructed and maintained as to prevent exhaust gases from entering the motor coach floor. Where exhaust gases in pipes above the floor line are used for heating the vehicle, no mechanically connected joints of any type will be permitted in such pipes above the floor line of the vehicle.

Sanitary and Clean.—Every motor vehicle used for the transportation of passengers shall be maintained in a sanitary and clean condition at all times.

Lighting (interior).—Every motor vehicle used for the transportation of passengers after sunset and having a covered top or top up, shall maintain a light or lights of not less than two candle-power each within the vehicle so arranged as to light up the whole of the interior of the vehicle, except that portion occupied by the driver.

Heating.—All motor vehicles used for the transportation of passengers in cold weather shall be equipped with a suitable, safe and effective heating system sufficient to keep the same reasonably comfortable for the occupants.

Ventilation.—Every closed motor vehicle used for the transportation of passengers shall be so constructed as to permit of proper ventilation. Openings for ventilators which are in direct line of air stream from side louvers in engine hood, will not be permitted.

Gasoline Tanks

All gasoline tanks of all passenger vehicles, except those of touring car type of car seating nine (9) or less persons, shall be located entirely outside of that part of the body of the

Safety is and must be a paramount consideration in connection with the operations of transportation companies. Within recent weeks, there have been several unusually tragic accidents in which the lives of a number of motor coach passengers were lost. Entirely apart from the sad loss of life involved, such accidents give motor coach transportation a bad name from which it must necessarily be slow in recovering.

Safety is largely a matter of management. The establishment of rules and regulations designed to eliminate hazards and the strict enforcement of such rules and regulations is a step in the direction of greater safety in highway transportation. California has been a leader in the development of motor transport, and it is fitting, therefore, that careful attention be given to the safety rules and regulations laid down by the regulatory commission of that state.—EDITOR.

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motor vehicle utilized for the carrying of passengers, with an inlet for filling which shall permit filling from the outside exclusively. Tanks must not be filled while the engine is running.

Inspection

California Railroad Commission.—The commission and its duly authorized representatives shall have the right at any time to enter into or upon any vehicle operating under these rules, for the purpose of ascertaining whether or not said rules are being properly observed. The operator of any such vehicle shall offer such representative of the commission all reasonable facilities for making such inspection.

Company Inspection.—All passenger-carrying vehicles in service shall be carefully inspected daily by a competent inspector, and a careful record kept of such inspection and report thereon.

Qualification of Drivers

Every person employed by any automotive passenger stage corporation or transportation company to operate a motor vehicle shall possess the following qualifications, to wit:

Age.—Shall be at least twenty-one (21) years of age.

License.—Shall be licensed in accordance with the requirements of the California Vehicle Act.

Personal Qualifications.—Shall be physically sound, of good character, and fully competent to operate the motor vehicle under his charge.

Experience.—Shall have had at least one (1) year's actual experience in operating any motor driven vehicle.

Knowledge of Routes.—Shall have full knowledge of the routes over which he operates.

Liquor and Drugs.—Shall not drink intoxicating liquors or use narcotics.

Smoking

By Drivers.—No driver or operator of any motor vehicle carrying passengers shall smoke a pipe, cigar or cigarette in such vehicle during the time he is driving the vehicle.

By Passengers.—Smoking or the carrying of lighted or smoldering pipes, cigars or cigarettes, shall not be permitted in any passenger-carrying vehicle, except in such seats or in such compartments as the company may specially designate for smoking.

Transportation of Explosives

Transportation of explosives, inflammables or dangerous or injurious gases on vehicles used for the transportation of passengers is prohibited except such as are permitted by law.

Carriers shall not permit hunters or any other person, except those permitted to do so by law, to board common carrier passenger vehicles, carrying loaded firearms.

Carriers may transport moving picture films when such firms are encased in safety containers.

Transportation of Property

The amount of freight, express, or baggage that may be carried in a vehicle with passengers shall not be greater than can be safely and conveniently carried without causing discomfort to passengers.

Every motor carrier, except urban carriers, transporting passengers, taking possession of a passenger's baggage, shall give to such passenger a baggage check, so numbered or lettered as will enable the carrier to identify the passenger's baggage, said check to be surrendered by passenger upon delivery of the baggage.

Duties of Drivers

Collection of Fares.—No person driving a motor vehicle used for the transportation of passengers shall collect fares, make change or endeavor to take on or discharge passengers, while such motor vehicle is in motion.

Unnecessary Conversation.—Drivers of motor vehicles carrying passengers shall not carry on unnecessary conversation with passengers while the vehicle is in motion.

Soliciting.—No driver or operator of a motor vehicle shall create any disturbance or unnecessary noise to attract persons to the vehicle.

Closing of Doors.—No passenger stage shall be started until its doors have been closed, nor shall its doors be opened until stage is stopped.

Seating of Passengers

No greater number of passengers than permanent seats are provided for shall be transported on any piece of equipment used in automotive passenger stage service, except that, in

an emergency, aisle jump seats or stools may be used to the following extent:

3 stools or jump seats in 21-passenger car

5 stools or jump seats in 25-passenger car

7 stools or jump seats in 33- (or over) passenger car, provided that within a reasonable distance passengers compelled to use the stools or jump seats, because of unexpected transportation demands, shall be provided with regular seating accommodations.

The seat alongside of driver shall be used by a passenger only if and when all other seats are occupied.

Drivers and operators shall not allow passengers to ride on the running boards, fenders or any other part of the vehicle than the seats thereof.

No driver or operator of a motor vehicle used for passenger traffic shall permit or allow on the front seat of such motor vehicle more persons than the seat is designed to carry, inclusive of the driver; or permit or allow any person to occupy any other portion of said vehicle forward of the back of the driver's seat.

No person shall be allowed to sit on the front seat to the left of the driver in a left-hand drive motor vehicle, or to the right of the driver in a right-hand drive motor vehicle. No more than one person shall occupy the front seat of any motor vehicle with a touring car body, operated by center control.

Standees shall not under any circumstances be permitted on any motor vehicle other than those operating in urban service, and in urban service shall not be permitted, unless the head room in the motor vehicles operating in such service is six feet two inches or in excess thereof. The number of standees which shall be permitted on any motor coach operating in urban service shall not exceed the number which can reasonably and safely be accommodated without crowding, and each standee shall be supplied with a grab handle or other means of support.

Railroad Crossing

Drivers of every vehicle operated by automotive passenger stage corporations and by transportation companies, as such are defined, respectively, by the Public Utilities Act, and the Auto Stage and Truck Transportation Act, shall before crossing the tracks of any steam or electric interurban railroad bring such vehicle to a full and complete stop not less than 10 feet, nor more than 50 feet, from the nearest rail of the railroad over which the highway crosses. After making the stop hereby required, the driver or operator of the vehicle shall carefully look in each direction for approaching cars or trains and shall not start his vehicle until it has been ascertained that there are no cars or trains approaching the crossing in either direction. This order shall apply at all times except when traffic officers are on duty and directing traffic at said crossing, but it shall not apply at crossings over street railway tracks within municipalities.

After making the stop provided for in this rule, the motor vehicle shall not be placed in a different gear than that in which start has been made until tracks have been crossed. Coasting on approach to railroad crossings is absolutely prohibited.

Hours of Service

No transportation company owning, controlling, operating or managing any motor vehicle used in the transportation of persons or property as a common carrier for compensation shall cause or allow, except in an absolute emergency, any driver or operator of any motor vehicle to work as a driver or operator for more than ten consecutive hours in any twenty-four-hour period; and, provided, further, that in urban service (as defined in these rules), when said driver at the end of said ten hours is at some point other than a regularly established relief point, the time required for return to relief point, provided it does not exceed one hour, shall not be included in the ten-hour period.

Station Facilities

Every motor carrier transporting passengers shall provide and maintain adequate rest rooms and facilities at sufficient intervals for the accommodation of passengers. Rest rooms and facilities shall be kept clean and comfortable for the accommodation of the traveling public. Motor carriers, except those whose equipment is provided with toilet facilities, shall be required to stop at such rest stations at least once approximately every hour and forty-five minutes for a reasonable period.

Brakes

Service Brake.—Every motor vehicle shall be provided with a good and efficient service brake capable of stopping the vehicle

(Continued on page 1284)



Cadillac Sedans and Touring Cars Are Replacing Motor Coach Equipment (Left) on the Indian Detours

Santa Fe Expands "Detour" Highway Service

Replaces motor coaches with Cadillac sedans for New Mexico trips and adds motor coach trips through Petrified Forest

THE "Indian Detour" service for tourists, which has been offered for several years by the Atchison, Topeka & Santa Fe in conjunction with the Fred Harvey organization, is being expanded for the coming summer season. The Indian detour service has proved to be a valuable attraction to travelers over the Santa Fe between the Middle West and California, offering the opportunity for passengers to leave the transcontinental trains for one or more days in order to visit the scenic and historic attractions of the region around Santa Fe, N. M., in Santa Fe Transportation Company motor coaches or automobiles. Already one of the most distinctive railroad-operated motor coach tourist services in the country, the operation is now being changed substantially and a new service is soon to be offered in Arizona.

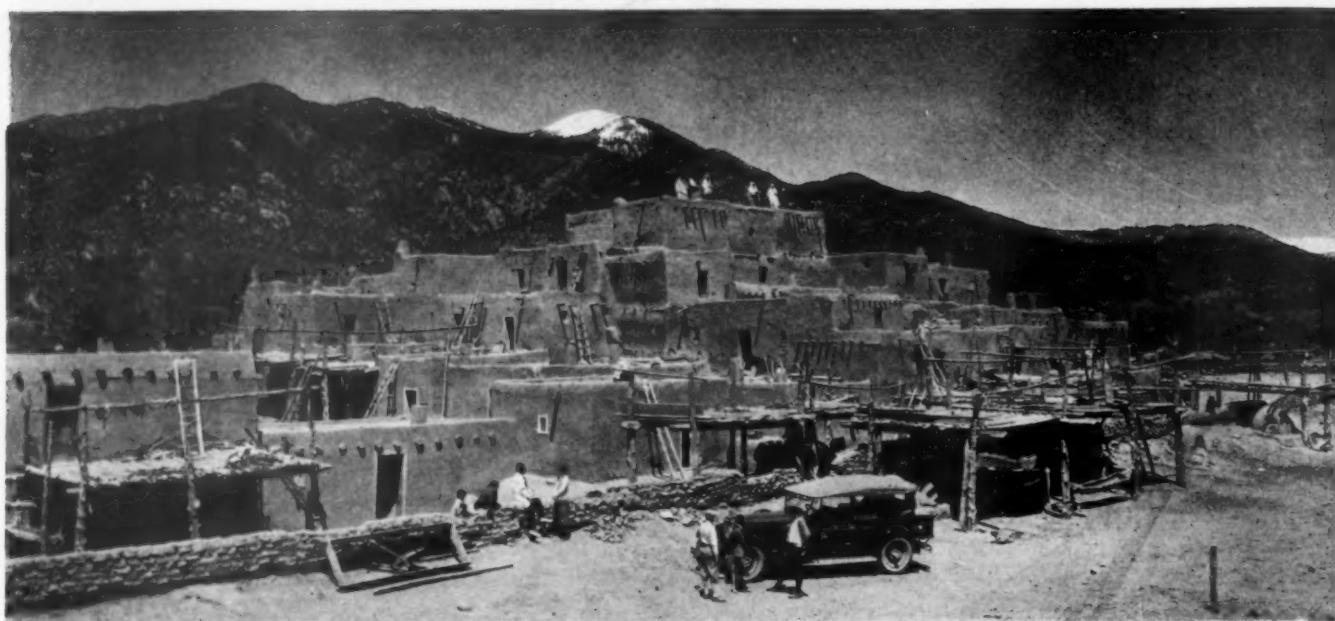
New Equipment in New Mexico

The principal change in connection with the Indian detour service in New Mexico has been made in the equipment provided for the transportation of passengers. Previously, the Santa Fe Transportation Company used a fleet of specially-designed motor coaches, seating 11 passengers in addition to the driver and a

girl courier. Effective May 15, however, these motor coaches were taken out of the New Mexico service, and were replaced with seven-passenger Cadillac se-



On the New Petrified Forest Detour



Taos, Pueblo, on the Three-Day Indian Detour

dans and touring cars. These will accommodate four passengers in one party, in addition to the driver and the courier. The principal reason for the change in equipment was the desire to use more flexible and powerful cars, the topography of the country traversed on the Indian detours being such as to necessitate a considerable amount of low gear operations by motor coaches.

Variety of Trips Offered

Two regular detours and a wide variety of special trips are being offered this summer in the Cadillac "HarveyCars." A two-day tour, costing \$40 on an all-expense basis, extends to the Frijoles canyon and to the Puye cliff dwellings. Passengers leave the train, either east bound or westbound, at Lamy, N. M., and on the first day stop at Santa Fe, N. M., at Frijoles canyon and at the San Ildefonso Indian pueblo, before returning to the La Fonda, the Fred Harvey hotel at Santa Fe, for dinner and over-night. On the second-day, a trip is made up the Rio Grande valley to Santa Clara Indian pueblo, and then up the Santa Clara canyon to the Puye cliff dwelling ruins for lunch. After a tour of Santa Fe and another night at the hotel the passengers are returned to Lamy to resume their rail journey.

Tours on All-Expense Basis

A three-day Indian detour costing \$65 is in part the same as the other one, except that tourists, after luncheon at Puye on the second day, proceed to Taos where they have dinner and spend the night at Don Fernando hotel. On the third day, they visit the Taos Indian pueblo, the Mission and the Rio Grande gorge, and return to Santa Fe for the night, resuming their rail journey from Lamy the following morning.

Beginning on June 1, a new detour service, known as the Petrified Forest Detour will be offered to passengers traveling westbound on Santa Fe train No. 9, the Navajo, and for eastbound passengers on Santa Fe train No. 2. The outstanding feature of this new service is that passengers making the trip return upon its completion to the same train upon which they were previously traveling. This detour costs \$4.50 and requires about three hours, approximately 70 miles being covered by motor coach. The equipment to be provided

on this service consists of motor coaches previously used in the Indian detour service in New Mexico, which have been released by the purchase of the new Cadillac equipment.

Westbound passengers on train No. 9, who desire to take the Petrified Forest detour, leave the train at Holbrook, Ariz., shortly after breakfast, and in motor coaches journey to the southern part of the Painted Desert, with a 30 minute stop in the Rainbow Forest of the Petrified Forest National Monument. They arrive at Winslow, Ariz., in time for luncheon, before rejoining the same train that they left at Holbrook three hours before. East bound passengers on train No. 2 leave the train at Winslow at breakfast time and rejoin it at Holbrook. The schedules of trains No. 9 and No. 2 are being slowed up somewhat between Winslow and Holbrook as a result of the establishment of the Petrified Forest detour service.

For Greater Safety in Operations

(Continued from page 1282)

in accordance with the provisions of the California Vehicle Act.

Emergency.—Every motor vehicle shall be equipped with a manually operated emergency brake, no part of the rods, levers or connections of which shall be the same or a part of the rods, levels and connections of the service brake.

Such emergency brake shall be maintained in a serviceable condition at all times, and be of sufficient power, when operated, to bring the vehicle to a stop under all conditions of speed, load and grade encountered in the service to which the vehicle is assigned.

Careful Driving

Operators of motor vehicles used in the transportation of persons or property shall at all times operate such vehicles in a safe and prudent and careful manner, having due regard to the traffic and use of the highway by others. All the requirements of the California Vehicle Act and the safety rules and operating regulations of this commission must be strictly observed at all times.

Not Retroactive

Nothing in these rules, the observance of which makes necessary the reconstruction of equipment, shall apply to equipment now in use or on order. All equipment not in conformity with the requirements of these rules must, however, be reconstructed to conform or be retired from service within a reasonable time.

Why Not Store Door Delivery?*

*Report of Railway Express Agency committee on pick-up
and delivery service for l.c.l. freight cited in
support of a nation-wide plan*

By Harry G. Williams

President and General Manager, United Highway Transit Lines, Albany, N. Y.

THE problem of the present era is not one of supplying adequate transportation facilities, but one of finding economical and more efficient ways of utilizing the facilities already available. As a matter of fact, the tendency of the present era has been more and more toward the elimination of material and economic waste along all lines.

As a measure in the interest of more economical, more efficient, and more expeditious handling of less-than-carload freight shipments, representatives of shippers and carriers in our country have given considerable thought and attention to the question of store-door delivery; but on account of the difficulty encountered in reconciling numerous conflicting interests, little progress has been made toward the general utilization of proposed plans for store-door delivery service on freight traffic. The idea is fundamentally sound, and it warrants careful study on the part of those interested in transportation economics to the end of finding a plan which may be applied with universal satisfaction. One will scarcely find anything better, as a basis for study and discussion of the problem of store-door delivery, than the exhaustive report rendered by the Special Service Committee composed of representatives of the American Railway Express Company, extracts from which are reproduced below.

What Is "Store Door Delivery?"

The term "store door delivery" is somewhat elastic, and means different things to different people. Some take it in its literal sense as referring only to the immediate delivery of inbound l.c.l. freight to the consignee, but the term also embraces the idea of picking up shipments at the shipper's door as well as immediate delivery to the consignee. There seems to be no uniform opinion as to whether such service should be separately performed by each railway for itself, as is done in Great Britain; whether it be performed at a few of the larger points by contract with outside trucking mediums, as in Canada; whether there be one agency to cover all points, or separate agencies at each point. There is likewise no uniform opinion as to the nature and character of the service, i.e., whether it shall be a complete service under which one agency assumes charge of the shipment from the shipper and discharges that responsibility only when a good-order receipt is obtained from the consignee, as distinguished from a trucking medium assuming responsibility at point of origin only for cartage to the railroad, and at destination as to cartage from the railroad.

Under present methods, it is the shipper's responsibility to transport l.c.l. freight by any method he sees fit to the railroad, and the consignee's duty to take

it from the railroad. The option of shipper and consignee to use whatever means they may elect in the performance of their respective obligations naturally results in immense diversity of practice and much duplication of effort. The question is, what method can be substituted which will make for simplicity and economy, not only as to the public but as to the railroads performing the line haul.

L.c.l. Freight and Express Services Compared

If the question were simply one of setting up a through store door delivery service by one organized responsible medium, the answer would be simple—it would merely be necessary to point out that store door delivery in the United States is a fact and has been a feature of business life in this country for over eighty years in the service now rendered by the Railway Express Agency and its predecessors. There are approximately as many separate shipments moving by express as there are separate l.c.l. shipments of all the railroads of the country combined; but since each shipment of l.c.l. consists of a larger number of pieces with greater weight, the volume of l.c.l. is consequently much larger.

Express service is in fact store door delivery, but it provides rail transportation on passenger trains or trains moving at substantially passenger train speed. It is an expedited store door delivery service, and except for the disturbances growing out of the great war no criticism could be made against the express service. It may be stated that the only reason that express service has not absorbed all of the less carload traffic is simply a matter of rates. But since passenger train transportation involves higher cost than freight train transportation, no express rates can be made comparable with freight rates, plus pick-up and delivery, with profit to the express and rail carrier.

Evidently the advocates of store door delivery realize this situation and in their use of the term contemplate a service similar to express in which the rail transportation is performed by freight train instead of passenger train, with the further thought that such service could be rendered at rates comparable with present freight rates plus terminal truckage expense.

Value to Railroads

Those advocating store door delivery are impelled by a variety of motives. As to railroads, it would enable them to clear their inbound platforms promptly, promote car economy, reduce transfer, both inter-road and intra-road, and economize in terminal station requirements so as to avoid future capital expenditures, and perhaps set free a portion of the present terminal property for other more profitable uses. Any comprehensive system should likewise reduce yard storage tracks and the number of yard and terminal switching

* From a booklet distributed by the Committee on Education and Research of the Associated Traffic Clubs of America.

movements, and finally enable the railroad to handle l.c.l. at distant make-and-break stations where cheap land is available, and discontinue the use of the numerous substations now located on piers or in congested portions of cities where real estate is expensive and room for expansion scarce.

Economies Desirable

The thought prevails that l.c.l. freight is now handled by railroads at an actual loss, if all elements of cost could be accurately calculated. It is certain that the handling of such business requires disproportionate effort as compared to revenue, and that loss and damage is higher upon this class of freight than any other. An officer of one prominent railroad stated that l.c.l. represented 6 per cent of the tonnage but required 23 per cent of the cars. In the report of a special committee of the United States Chamber of Commerce, it was shown that l.c.l. accounted for 4 per cent of the tonnage but contributed 38 per cent to loss and damage. It is merely necessary to note one example wherein a shipment consisting of 31 pieces weighing 1625 lb. was transported 23.6 miles at a total freight charge of \$1.75. Obviously, any system by which the cost of handling l.c.l. could be materially reduced would be welcome to the railroad man.

Value to Shippers

The shippers are interested in any system which holds out a hope of more efficient freight service; and while it is questionable whether merchants generally would subscribe to any plan by which their transportation cost, including truckage, would be increased, it cannot safely be assumed that a more efficient and dependable service would not finally win support, even at high rates.

This is illustrated by the success of the express company through its more efficient service, holding business diverted from freight channels in spite of higher rates. However, the study of the subject discloses no evidence that merchants have any thought of paying higher rates, but the trend of thought does not appear to be emphasizing rates so much as service. In other words, the desire appears for superior service at the same or lower rates.

Value to Express Service

The express man is interested in store door delivery as a system of handling l.c.l., resembling express in every important particular, and which, if established on an efficient and economical basis, would prove a formidable competitor. He can appreciate that the establishment of a system differing only from express rail transportation on freight trains, but at rates materially lower than express, would tend to attract to this channel business now moving by express. However, the express man also appreciates the fact that in Canada where a modified store door delivery system exists, express companies have also existed, prospered and grown, and in this country, despite the competition of the parcel post and every other traffic agency, the express business has steadily increased. History shows that once traffic is moved in express channels it tends to stay there despite higher rates.

Value to Freight Service

The advantages of a store door delivery system for handling l.c.l. freight are manifold and undeniable. There is no room for doubt that if one responsible and efficient agency handled the l.c.l. freight traffic of the country under a system substantially similar to that of

express, the railroads would be tremendously benefited through terminal interchange, transfer and rail-haul economies and, furthermore, that one system embracing all railroads, as does the express company, should be able to handle such traffic in fewer cars, and reduce car mileage. The reduction of capital necessities for car and engine supply alone is an important feature.

The Present British Practice

In any consideration of this subject, it is necessary to review in detail English and Canadian practices and compare them with American practices in the handling of l.c.l. freight and express.

In Great Britain, road transportation preceded rail transportation. Business existed before the railways and was transported over the roads by trucks or "carts," as then termed. Many large transportation companies existed, moving freight over the road by cart and even by canal. Under these practices, store door delivery of all kinds of goods had been a feature of English business practice for generations prior to the existence of railways. When the railways were built, the cartage organizations were already established and entrenched. In competition, it became necessary for the railways to establish a rival system offering complete transportation from shipper's door to consignee's door. In some cases this was done by contracting for cartage at local offices, and in other instances by purchase of or amalgamation with the cartage organization and thereafter continuing the arrangement as a part of the rail carrier's system. But in any event English business may be said to have grown up under an established system of complete transportation from shipper to consignee, either one of which, but generally the consignee, paid the entire charge for the through service.

Under present conditions, each of the British railways has its own cartage organization, the only exception being in London where some roads have joint cartage service, but this is said not to be particularly satisfactory. In the larger cities, each of the railways runs its own cartage service, but at the smaller places having free delivery service, each railway contracts for it with outside cartmen. This corresponds to the practice of the Railway Express Agency in contracting out its free delivery service at points where the volume of traffic does not warrant maintaining exclusive vehicle service.

American Express and Freight Service of British Railways Compared

In this country, the situation differs from that existing in either Great Britain or Canada, and while the British system is most often cited as the practice which should be followed here, those doing so have generally failed to take into consideration the fact that the Railway Express Agency is the largest store door delivery agency in the world and is performing a service in this country which possesses all the good features of the British system as well as important advantages not enjoyed there. Whereas each of the British railways has its own cartage service, in this country the express service is universal and extends over practically every railroad in the country, thus affording one responsible agency touching every city and practically every village and hamlet reached by railroad and many that are not.

In this country, express service is rendered by one responsible carrier from shipper's door to consignee's door, and the rail service is performed on passenger trains or at substantially passenger train speed. Any comparison of American and British practices must take

into consideration the vast extent of this country, approximating that of all Europe, and the relatively higher wages enjoyed by our employees in the maintenance of American standards of living.

Rate Making for Such Service

To replace the present individual and competitive system with one large organization would create a different situation. Obviously employees of a large company would be restricted in their ability to bargain with merchants. While rates named might vary according to the nature of the business and the length of haul, they would of necessity be uniform and available to all desiring the service. Such a large organization could exact no guarantee as to tonnage nor from day to day impose penalties to meet unusual conditions, but would have to hold out a service available on demand to all desiring it, without respect to whether such service necessitated the use of extra vehicles or otherwise.

Under these circumstances, any rates named would necessarily be based upon averages within a hauling zone, with the prospect that under any average rate the short haul business that could be economically transported otherwise would not be offered, leaving the trucking organization only the more expensive business to handle.

Government Regulation of the Service

Moreover, if, through arrangement with railroad carriers, any single organization performed all or nearly all of the terminal truckage, it should be assumed that its rates and practices would finally be subject to the jurisdiction of the Interstate Commerce Commission and the various state regulatory bodies. If it issued through receipts, very likely the Interstate Commerce Commission would eventually claim jurisdiction. If it did not issue through receipts, but simply undertook local truckage between the shipper and the railroad, it would then be under the necessity of obtaining a bill of lading from the railroad and delivering it back to the shipper, a complicated and expensive process and one which would be contrary to the concept of true store door delivery.

However, even if such an organization performed only terminal service, the state bodies would doubtless assume jurisdiction in the same way as has been done with baggage transfer companies operating under contract or in conjunction with railroads. Prudence requires that, under any plan of this kind, promoters should reckon upon their rates, classifications and delivery zones finally appearing in published form and susceptible to no change except according to laws governing public service corporations.

American Experiences in Store Door Delivery

The most notable instance of actual operation of store door delivery of l.c.l. freight in this country is the system which prevailed at Baltimore and Washington, commencing in 1867, by the P. B. & W. railroad (later absorbed by the Pennsylvania) and from 1886 by the Baltimore & Ohio. This service provided free pick-up and delivery for certain classes of freight in both cities within designated delivery zones, and the freight rate charged by the railroads included terminal wagon service. It differed from the English system in that the freight rates were no higher than station-to-station rates, so that the pick-up and delivery service afforded by the railroads was a charge against the rail line haul revenues.

This system continued in operation until 1913 when

it was cancelled by the carriers, growing out of complaints made to the Interstate Commerce Commission respecting extensions of free delivery zones. The commission in its decision supported the position of the carriers that they were justified in withdrawing such free delivery service as unreasonable and discriminatory, in that the cost of such collection and delivery had been included in the station-to-station rates. It seems obvious that if higher rates had been named to take care of the collection and delivery service, no such decision would have been rendered, and that if the practice of railroads furnishing free truckage, had been general everywhere, the charge of discrimination could not have been supported.

The Present American Practice

It must not be assumed from the foregoing that the American receiver of freight is entirely without facilities for prompt delivery. Such is far from being the case. At most freight stations, it is a common practice for regular receivers of freight either to have on file standing orders for the delivery of their freight to specified truckmen who make daily calls, or their own vehicles call daily. With respect to the business of prominent receivers, there should be no delay or terminal congestion.

In some cities it seems to be the practice of railroads to give to some recognized truckmen other freight on which no orders are received, the truckman offering such freight delivery and taking his own chances of getting rid of it. This is the practice in Washington with the Merchants Transfer Company, and we are informed that it effects delivery of practically all of the freight so turned over to it by the railroad. In Chicago we understand the New York Central delivers such freight to the Jos. Stockton Transfer Company, and that the Stockton firm encounters little difficulty in making deliveries, so that under these circumstances it will be seen that, as to large receivers at practically all points and occasional receivers at many points, a system exists whereby there is little or no terminal delay.

Of course, this does not mean that freight, even under these circumstances, is as expeditiously or efficiently handled as would be the case if it were in charge of one responsible organization from shipper's door to consignee's door under a through receipt as in express handling. It is simply mentioned so that it will not be thought that all business received at all freight stations is necessarily held until postal notices of arrival are mailed to consignees and orders received.

The advantages of the British practice are more prominent when considered with respect to occasional shipments of freight than with the business of important houses. Even these advantages are more prominent at the time of car shortage or terminal congestion when the ordinary channels of transporting l.c.l. freight are blocked. No such condition appears to exist today. The railroads are handling a heavy volume of l.c.l. freight and are giving it reasonable dispatch, so that, from the merchants' standpoint, all who have regular connections with truckmen are receiving excellent service at moderate cost.

The occasional shipper is, of course, at a disadvantage. He must hunt up a truckman and possibly pay a high minimum charge because of small forwardings. No doubt to such shippers a unified service would appeal. But in this connection, it must be remembered that in the aggregate, the volume of occasional business is not impressive and, furthermore, that it is to such shippers that the present express service appeals most.

New Equipment

Autocar Introduces a High-Speed Six-Wheel Truck

ANTICIPATING a trend in heavy-duty vehicles toward the use of six wheels, with consequent better load distribution and reduced damage to the highways, the Autocar Company, Ardmore, Pa., has developed a new large-capacity truck which incorporates the Timken S-W, worm type, four-wheel driving unit. The truck is built for high speed service, and is powered with the recently designed Autocar Blue Streak engine which develops 101 horsepower at 2,000 r.p.m. The model G has a wheelbase of 195 in., the model GA, 211 in. and the model GB, 237 in.

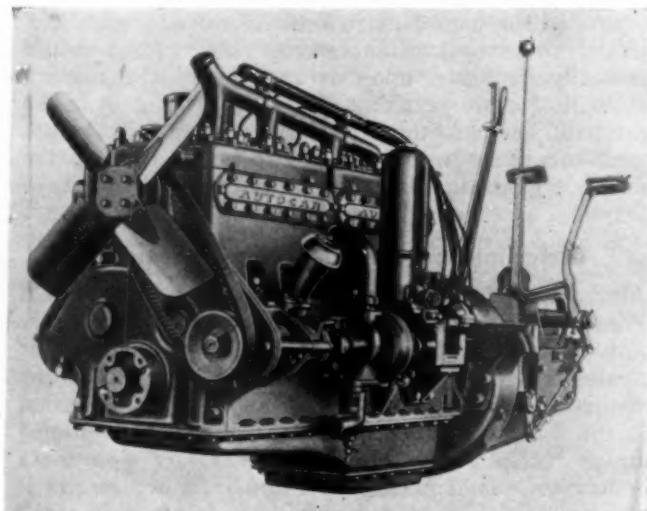
The Timken rear-drive unit provides a self-contained assembly of two worm-drive axles, and makes use of a balanced spring suspension which equally divides the rear end vehicle weight between the four driving wheels.

The worm shafts of the forward and the rear driving axles are kept practically parallel under all road conditions by four torque rods which are connected to the spring seat by ball joints. If one axle is raised above the other, as in going over an obstruction, the torque rods prevent excessive wear or damage to the universal joints. The load is supported by conventional semi-elliptic leaf springs which are attached to an equalizing beam and are free to move under the spring seat. The ends of the equalizing beam have bronze bearings with circular seats to allow the axle to conform to road irregularities without placing a bending stress on the springs. With the vehicle fully loaded and on level ground, a straight line drive is obtainable. The FJ type of worm gearing is used in this unit as in single-axles.

The foot-controlled service brakes are Westinghouse air-operated, internal expanding on all six wheels. The rear brakes have a diameter of 17½ in. and are 4 in. wide, and the front brakes are 16 in. in diameter and 3 in. wide. The hand brake operates on a ventilated disc on the drive shaft.

The new six-cylinder engine has a bore of 4½ in. and a stroke of 4¾ in., giving 453 cu. in. piston displacement. The cylinders are cast in block with a

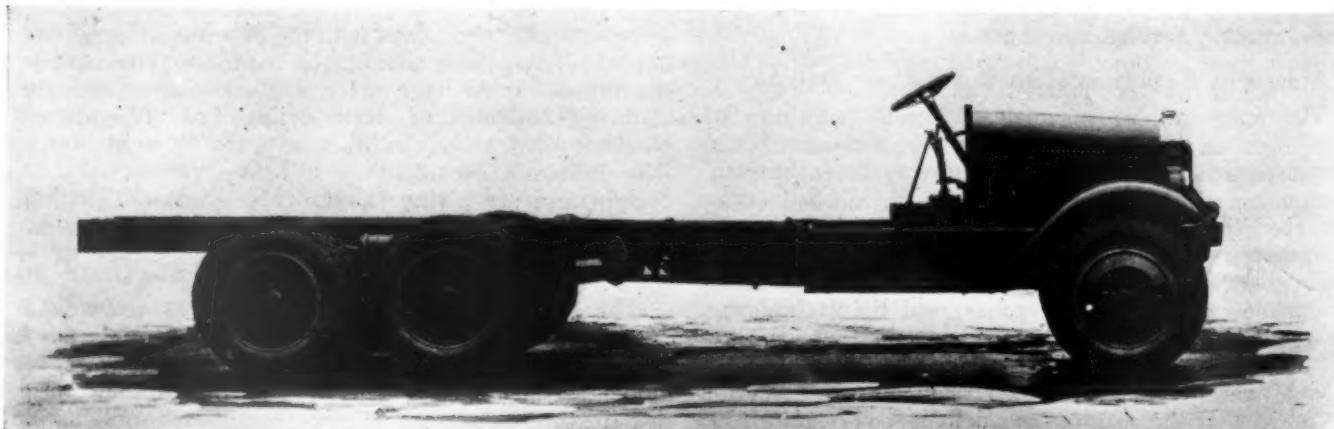
removable cylinder head and an L-head arrangement of the valves. The demand for higher average speeds and full-load performance for long periods has required the incorporation of several interesting features of design in this engine. To overcome vibration and to give a higher factor of smoothness in operation, the motor has great over-all rigidity. The crankcase is



New Heavy-Duty Engine Available in All Autocar Chassis of Three Tons or Over

made deeper, the flange face, to which the engine pan is bolted, being 3¾ in. below the center line of the crankshaft.

The water jacket wall has been extended all the way to the base of the cylinder block, thus reinforcing the joint face where the cylinder block and crankcase are bolted together. All of the main bearings are tied to the crankcase by wide flanged cross-webs which greatly increase the rigidity of the shaft and case. The cylinder block is made of chrome nickel iron of a higher degree of hardness to prevent the hammering-in



Autocar Six-Wheeler with New Blue Streak Engine

of valve seats and to give greater resistance to wear in the cylinder bore.

The stroke has been kept relatively short to decrease the inertia forces on the bearings at high speed and to reduce the piston travel and consequent wear. In making 1000 revolutions, the piston travel is 792 ft., as against 958 ft. if the engine were of $5\frac{3}{4}$ in. stroke.

An enlarged area for the circulation of cooling water is provided to counteract the tendency to overheat. Cooling water is taken from the radiator to a space directly under the exhaust valves and then around the cylinder walls, keeping all sections at the proper operating temperature.

All bearings are positively lubricated by a pressure

pump located in the oil pan and the passages through which the oil is carried are drilled into solid metal instead of being carried through piping. The connecting rods are drilled for the passage of the oil upward to the piston pins.

An auxiliary, over-and-under drive, three-speed transmission is used in conjunction with a sliding-gear transmission mounted on the engine, which has four speeds forward and one reverse.

The frame is made of heat-treated, chrome-nickel steel in a channel section, $10\frac{1}{2}$ in. deep, 3 in. wide and $5\frac{1}{16}$ in. thick. The outside frame width is $34\frac{1}{8}$ in. The tires are 36 in. by 8 in. pneumatics, dual on rear. All exterior bright parts are chromium plated.

Stewart Five-Ton Truck Has Eight-Speed Transmission

A HEAVY-DUTY 5-ton truck featuring a 6-cylinder high-powered engine, dual transmission, extra heavy frame, 4-wheel brakes with booster attachment and a large heavy-duty Timken worm-drive rear axle, has been announced by the Stewart Motor Corporation, Buffalo, N. Y.

The truck-type Waukesha engine has a piston displacement of 462 cu. in., and develops 100 h.p. at 2000 r.p.m. The engine is insulated from the frame by means of rubber-mounted front and rear supports to eliminate vibration and take up the twisting strains due to uneven road conditions. The pistons are made of cast iron, and the heat-treated steel crankshaft is 3-in. in diameter, with seven main bearings. A force-feed lubrication system extends to main bearings, rod bearings, cam shaft bearings, and to piston pin and gear case bearings. Throughout the engine, 25 bearings are lubricated by this method. A Stromberg carburetor equipped with an air filter and a gasoline cleaner is standard equipment. The generator, starter and distributor are of Delco-Remy manufacture. Magneto ignition can be furnished at extra cost.

The dual-unit transmission gives a selection of eight speeds forward and two reverse, and consists of a two-speed clutch unit, bolted directly to the bell-housing of the engine, and a four-speed frame transmission on a 3-point suspension. With a rear axle ratio of $8\frac{3}{4}$ to 1, which is standard, the following overall reductions are obtainable: Low range, first speed; 82.0 to 1, second

speed, 41.4 to 1; third speed, 25.6 to 1; fourth speed, 19.1 to 1, and reverse, 82.0 to 1; high range, first speed, 28.0 to 1; second speed, 14.15 to 1; third speed, 8.75 to 1; fourth speed, 6.56 to 1, and reverse 28.0 to 1.

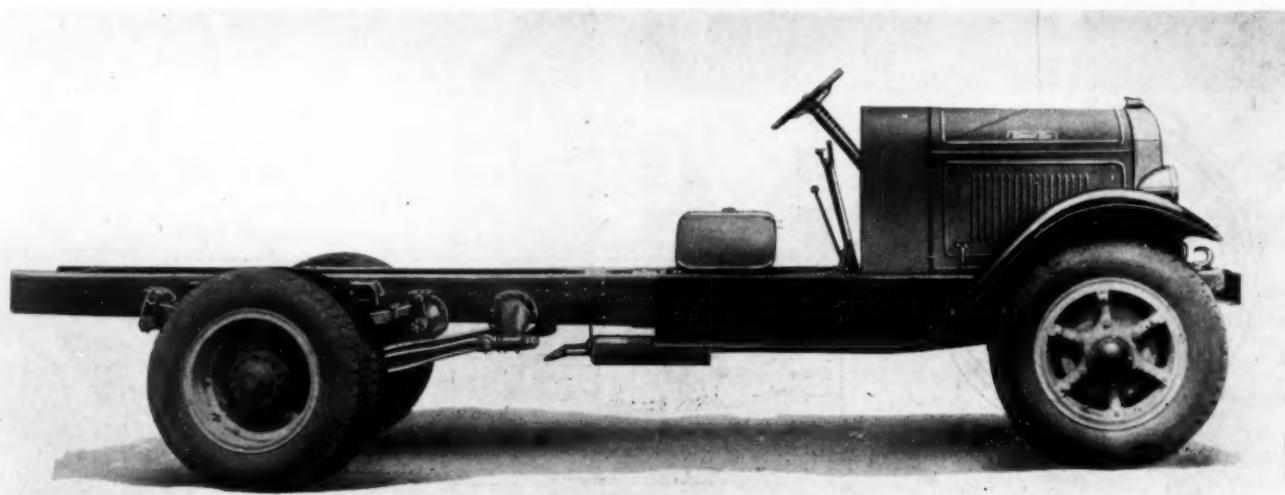
The dry-plate multiple-disc-type clutch has 15 discs, giving a total area of friction surface of 35.2 sq. in. Both clutch and pilot bearing have a positive means of lubrication.

The rear axle is made by the Timken-Detroit Axle Co., and is of the full floating, overhead worm type, supported by heavy radius rods. It has a rated load capacity, on pneumatic tires, of 17,500 lb. The axle housing is made of heavy section cast steel with $3\frac{1}{2}$ in. reinforcing sleeves of nickel steel. The worm shaft is mounted on two Timken bearings in the rear and one Hyatt bearing in front.

The nickel-chromium steel axle shafts have a diameter of $2\frac{1}{8}$ in. and have splined ends for both the differential and the drive flange.

The front foot brakes are the Bendix Duo-Servo mechanical, self-energizing type, and the rear brakes are Timken duplex, connected so that they operate as one unit. Both front and rear brakes are operated by a B-K vacuum booster of the latest type. The hand brake is located at the rear of the transmission and operates on the drive shaft.

The frame is made of heat-treated carbon steel, $9\frac{1}{16}$ in. deep at the point of greatest depth, with top and bottom flanges $2\frac{3}{4}$ in. wide.



Stewart Model 31-K, 5-Ton Truck

The radiator has a cooling area of 612 sq. in. and is insulated from road shocks by rubber mountings. Standard equipment includes 36 in. by 6 in. solid tires, single on front and dual on rear, with 40 in. by 10 in. single front and dual rear pneumatics, optional at extra cost. The wheels are of the hollow steel spoke type and

chassis lubrication is supplied by Alemite connections.

The standard wheelbase is 165 in. and a short wheelbase of 150 in. is available for dump truck work. Long wheelbases of 175 in., 190 in., 220 in. and 235 in. are available at extra cost. With standard wheelbase, the chassis weighs 8,400 lb.

New Timken Axle for Heavy-Duty Motor Coach Service

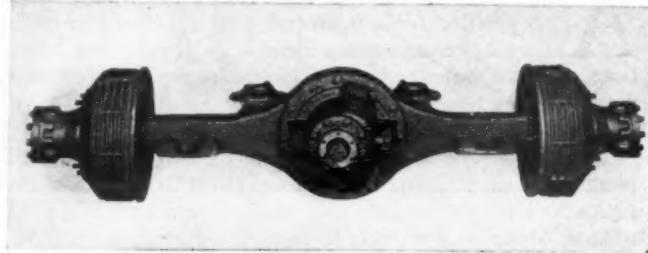
THE Timken-Detroit Axle Company, Detroit, Mich., has recently announced the new 59000 series, bevel drive type rear axle which has been designed expressly for use under high speed, large capacity motor coaches. Using dual 9.75-in. low pressure tires on 11½-in. center to center spacing, the overall width is slightly under 96 in., which is the maximum allowed by legislation in most states. The spring center dimension of 43 in. provides sufficient clearance between the springs and the inner tire. The spring seats are cast integral with the axle housing. Several important features have been incorporated which will give the axle longer life and increase the mileage between overhaul periods.

The bevel gear driving unit uses a spiral bevel gear and pinion. Two drive ratios are available, 3 8/15 to 1 and 4 1/13 to 1. The gears and differential parts are designed for high speed and heavy duty and to withstand the stresses imposed by a high torque power plant. The drive pinion has an extremely rigid mounting composed of three ball and roller bearings. The forward mounting consists of two tapered roller bearings, assembled with the outer bearing cups back to back in a bearing cage. These are Timken high-angle type bearings which, in addition to having high radial load capacity, can take a high thrust load without damage. A positive lock adjustment is provided on the threaded portion of the pinion which acts against the forward bearing cone to maintain the correct end play. The rear end of the pinion is mounted in a ball bearing which is supported by a pedestal, integral with the differential carrier.

When the vehicle moves either forward or backward, the thrust load is transmitted by one or the other of the roller bearings. The radial ball bearing at the rear end of the pinion has no thrust load capacity and is free to float in a horizontal direction. With this

construction, no allowance need be made for linear expansion and contraction and the pinion adjustment can be held to a free roll but with no end play. The sub-assembly, consisting of the tapered roller bearings and bearing cages, can be adjusted at a work bench where the end-play can be definitely determined with indicators.

As an additional precaution against drive gear de-

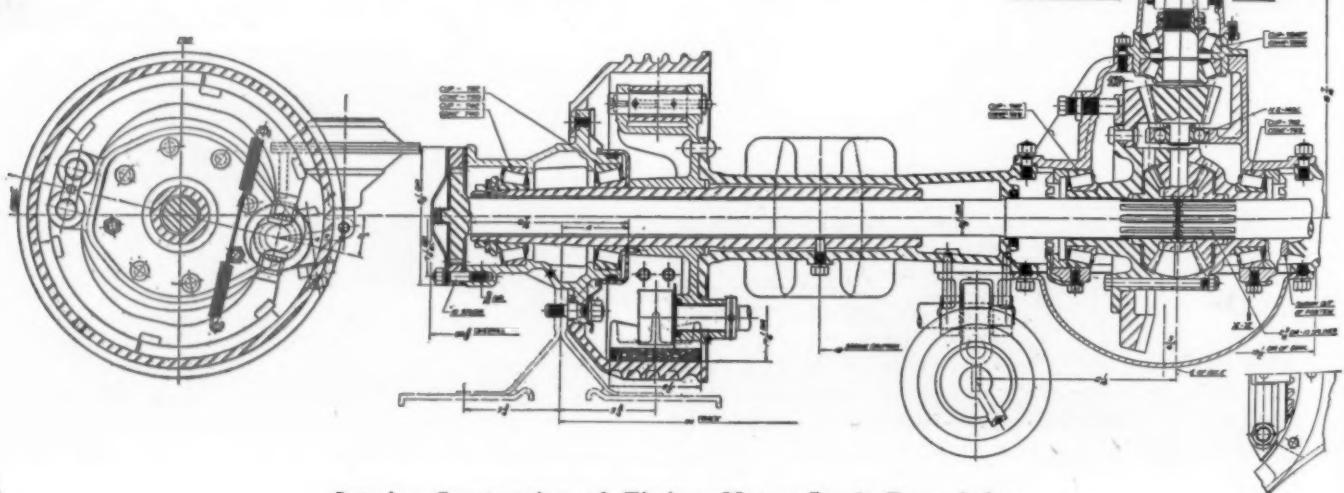


Timken 59000 Series Bevel Drive Rear Axle

flexion due to shock loads, a thrust block is provided which has a small clearance with the ring gear. This block is machined from a bronze forging and is adjusted by means of a heavy stud projecting through the axle housing.

The wheels are mounted on Timken roller bearings which are supported by a tubular axle housing sleeve made of heat treated alloy steel. This sleeve is pressed into the axle housing with a heavy press fit and not only provides a suitable mounting for the wheel bearings but also reinforces the axle housing.

The axle shafts are machined from alloy steel forgings heat treated to have the most desirable physical properties. The diameter of the body of the axle shaft is 2½ in. and the diameter at the splined inner end is 2¾ in. The driving flange is forged integral with



Interior Construction of Timken Motor Coach Rear Axle

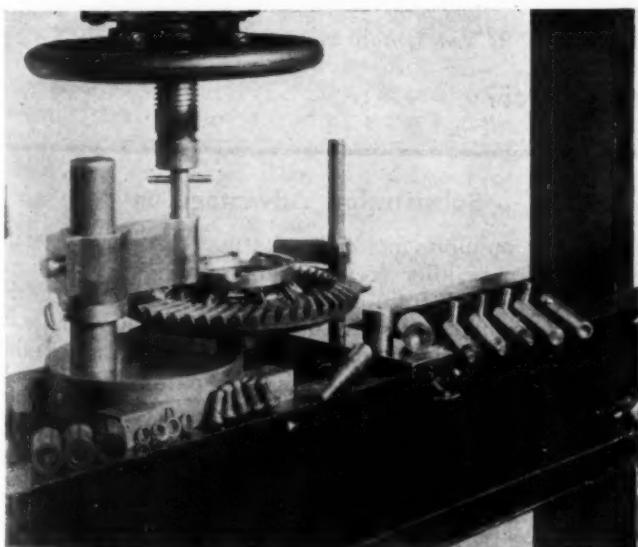
the shaft but is not directly attached to the hub, the driving effort being transmitted to the wheels through a gear tooth construction. Spur gear teeth are machined on the outside diameter of the axle shaft flange and a forged steel driving ring, within which are cut a series of internal gear teeth meshing closely with the teeth of the axle shaft flange, is attached to the hub by means of nickel steel studs. This provides a somewhat flexible construction which relieves the axle shaft of any bending strain due to improper adjustment of the wheel bearing, but gives a positive drive at all times.

A malleable iron brake spider is pressed on each housing sleeve and is riveted to the axle housing flange. The hub of this spider serves as a support for the inner wheel bearing and resists the thrusts resulting from the wheel and braking loads. The brake spiders provide a rigid mounting for the internal expanding two-shoe type brakes which are operated by Westinghouse air brake chambers mounted directly on the axle housing. The alloy cast iron brake drums have great rigidity and provide a desirable friction surface having maximum resistance to wear. The cast drums also have a high heat conductivity and allow a maximum dissipation of the heat generated in braking.

The brake drums are mounted on the outer face of the hub flange and are held in place by the disc wheel studs and nuts. This type of mounting permits the drums to be inspected and replaced without disturbing the hub or wheel bearing adjustment. The weight of the 59000-W bevel drive axle complete with disc wheel hubs and Westinghouse air brake chambers is 1450 lb.

Mayo Ring-Gear Riveting and Punching Fixture

THE Mayo Company, Portsmouth, Ohio, has developed a ring-gear riveting tool for use in connection with a hand press. A patented feature allows all rivets to be punched cold, preventing the distortion of the gear which is occasionally experienced in hot riveting. The device is made large enough in the throat to take care of truck and motor coach differential assemblies, and is adapted to handle



Mayo Ring-Gear Riveting Tool

gears using button-head or counter-sunk type rivets.

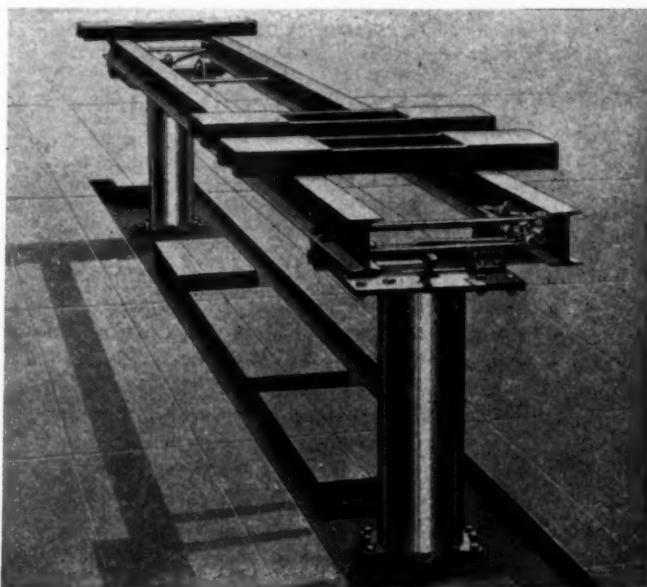
When removing button-head rivets, the head is first flattened with a special punch. This prevents any side movement of the shearing punch and leaves a minimum of metal to be sheared in punching out the rivet. The arm guiding the punch is designed to be swung out of the way when locating the gear in position, but it can be clamped against movement during operation. A stop is provided to hold the ring-gear in alignment with the punch.

Punches and sets are supplied for 5/16, 3/8 and 1/2 in. button-head or counter-sunk rivets. The manufacturers claim that this cold riveting process fills the hole completely, giving a full bearing of the rivet.

Manley Pneumatic Elevator

A HEAVY-DUTY elevator to raise motor coaches and trucks so that work can be done underneath and also to facilitate cleaning the chassis and removing wheels and tires, has been added to the line of automotive equipment of the Manley Manufacturing Company, Bridgeport, Conn.

The elevator consists of two 8-in. I-beams supported by two 10-in. seamless steel tubing plungers, which are free to slide within two guiding cylinders sunk in the floor. The air connection and operating valve will hold the elevator at any desired height, and may be attached



Manley No. 345 Elevator

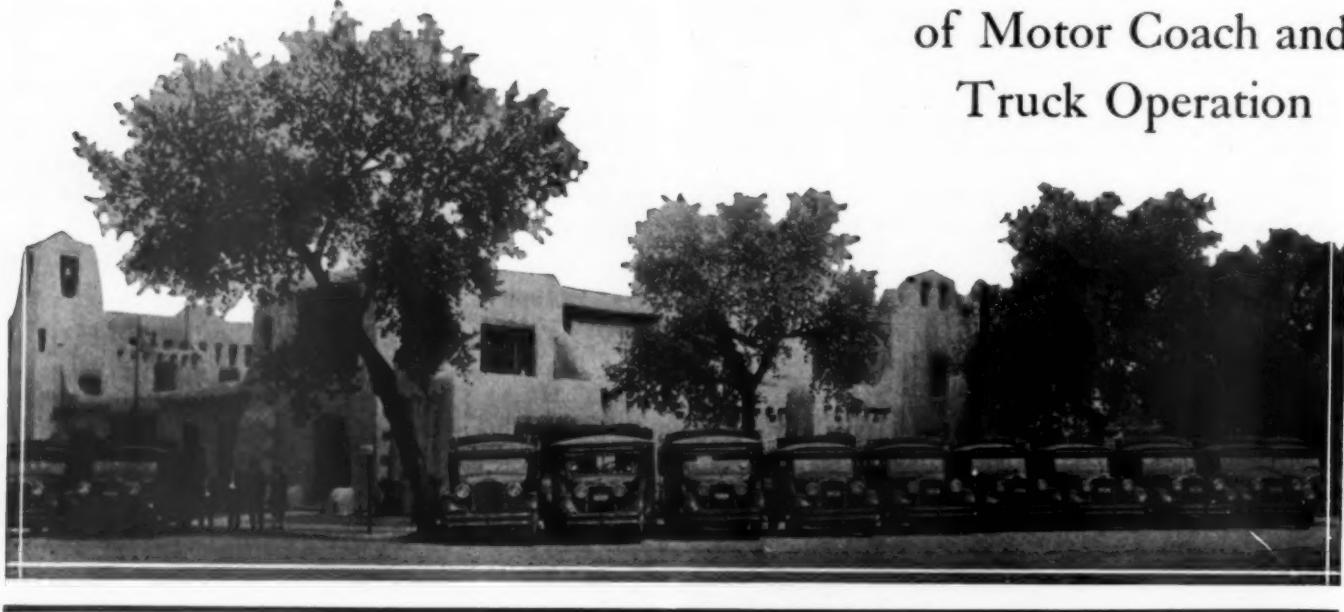
to the garage air supply. An unbalanced load on the cylinders is automatically controlled by a regulating valve which keeps them within a few inches of the same height at all times.

A minimum of floor space is taken up by the elevator, the design allowing it to be lowered flush with the floor, so that it can be driven over in any direction. The truck or motor coach is raised by the axle or frame members, thereby making the wheels accessible for repairs, adjustments or tire changing. Steel rest pads which are free to slide on the main bed channels, are placed under the axles and a sufficient number of wooden blocks is used to properly support the chassis.

The elevator is furnished in overall lengths of 18, 22 and 26 ft.

Every-Day Problems

of Motor Coach and
Truck Operation



This Month's New Questions

Question No. 24

What Steps to Avoid Accidents?

"What steps are taken by motor coach and motor truck operating companies to insure safe operation? Since safety depends partly on maintenance, what duties bearing on safe operation are charged to this department? Since the driver is the key man in motor vehicle operation, what training, supervision or operating requirements is he subjected to? How is the obedience of safety rules compelled? What other precautions or policies are in force to insure safe operation?"

Question No. 25

Developing Summer Tourist Traffic

"To what extent are railway motor coach operating companies attempting to develop special summer tourist traffic? What special service is being provided, and are special rates allowed? Are tours run on an all-expense basis or otherwise? To what extent is railway service utilized in connection with the tours? How is this traffic solicited and what advertising is done? If similar service has been offered in previous years, how successful has it been?"

What Is Your Answer?

Reply to Question No. 20

Operating Trucks in Freight Service

"What kinds of freight train service have you found it profitable to replace with motor truck service? Have definite economies or increased traffic resulted from such substitutions? Is store-door collection and delivery provided; if so, is an additional charge made? Have shippers paid this charge without objection? At rates comparative to rail rates, can l.c.l. freight be handled by motor truck at a profit?"

Substitution Advantageous

In our opinion, motor trucks may properly be substituted for peddler freight train service when the entire time of such train crews is occupied in the handling of l.c.l. freight only; in other words, where no car-load switching is involved. This also assumes that highways are available, substantially paralleling the railroad.

The outstanding advantage of such trucking service is that the rails are rid of slow-moving freight trains, which stop at various stations to receive and discharge freight. This, on a multiple-track railroad, frequently requires crossing over from one track to another in the face of opposing movements, as well as entailing delay

to following trains, etc. The service, as performed in our territory, is a station-to-station operation only, and does not comprehend store-door pick-up and delivery.

GENERAL SUPERINTENDENT.

Replies to Question No. 22

What About Express Traffic?

"To what extent are motor coach operators attempting to develop express traffic? How is the solicitation of this business carried on, and what commodities are most frequently handled? Is the express moved only between stations, or is it picked up at the shipper's door and delivered to the consignee? Is a special express compartment in the motor coach necessary? Who collects shipping charges, and what is the basis of rates? Is express traffic profitable and worth going after?"

Extra Revenue at Little Cost

We do not handle express traffic in the accepted sense of the word. We do have an arrangement on our motor coaches in West Virginia whereby packages are handled on motor coaches moving only from station to station. The West Virginia Transportation Company has stamps which are sold to newspapers, florists, dealers in automobile parts, and other firms which might use motor coaches for the purpose of sending small parcels from one point to another. These stamps are on sale at the agencies of the West Virginia Transportation Company, and, in addition, each motor coach operator carries a small supply for use at points where no regular agent is employed. Charges are made on a basis of weight of package handled.

We have made no intensive effort to secure this business, but handle such as is offered largely as a matter of accommodation. With respect to the profitability of such business, it can be said that whatever is collected is that much more revenue which accrues to motor coaches which are making the trip anyway; and, of course, any revenue secured in that way can be said to be profitable.

M. F. STEINBERGER,
Manager of Highway Transportation, Baltimore & Ohio.

Special Express Compartment Unnecessary

Our company is attempting in a very small way to develop express traffic. There is practically no solicitation for this business. Almost any commodity is being handled, from automobile parts to flowers. These express shipments are moved only between stations and are not picked up at the shipper's office nor delivered to the consignee.

A special express compartment in the motor coach is not necessary. Our agents, either at the point of origin or at the destination, collect the charges. The basis of rates is weight and distance.

Express traffic is profitable, providing, however, it does not become so great that it will limit the number of passengers hauled in the motor coach carrying it.

C. T. WOODWORTH,
Chief Traffic Clerk, Interstate Transit Lines.

\$2000 a Month Revenue

In 1929, our receipts from express alone amounted to \$2,000 a month. We have no special compartments for

express, but packages are received for by the driver upon receiving same from our agent, who has previously given the consignor a receipt. Our driver gets a receipt from the agent at destination, who informs the consignee by phone or otherwise of the package being on hand at his depot. The package is delivered to the consignee after signing another receipt to our agent.

We do not solicit the haulage of express nor do we pick up or deliver beyond our own motor coach depots. This business has grown through the fact that our service is more convenient on account of freight train schedules in most sections. Our tariff has been purposely made a little higher than regular express or mail rates, for the reason that if we made them the same or lower, we would not have room to carry all the express matter offered. In short, packages we receive are no doubt those which the consignee is in a hurry to get and on which he does not mind paying an extra charge for quick service. Our tariff shows the method of arriving at the cost, which is very simple and does not involve cubic measure, as do most express tariffs of carriers doing express business.

CHARLES E. CROZE,
Passenger Agent, Northland Transportation Company.

Rules Governing Northland Express Tariff

Packages are carried as an accommodation to the public. All shipments must be prepaid; no exceptions.

No C. O. D. shipments accepted.

In case of loss or damage, this company will not be liable for more than ten dollars (\$10.00)

This company will not be liable for delays due to breakdowns, bad roads, or for any cause over which we have no control.

The right is reserved to refuse transportation of fragile articles or packages liable to breakage; articles not properly wrapped, or any parcel which cannot be carried with reasonable safety and convenience.

ARTICLES RESTRICTED

Packages weighing over 100 pounds. (See exceptions).

Packages over 130 inches.

Shipments valued at over one hundred dollars (\$100.00)

Eggs, ice cream in iced tubs, liquids in glass.

Liquids not in sealed containers, fireworks, powder or caps, fruit, acids, gasoline or other explosives, animals, birds or poultry and all parcels or commodities which in the judgment of agents would be a hazard to the article itself, the bus or its contents.

Flowers may be accepted in freezing weather only on condition that package can be carried inside the bus and the shipper agrees that we accept shipment only "at owners risk" and signs the express receipt so marked.

Size in inches is determined by adding the length to the circumference (Girth) of package. For instance, a package 20" long, 8" wide and 5" high would be 46 inches.

In applying the rate, use the highest whether it be weight or size. For instance, a large light package would be charged for by size and a small heavy package would be charged for by weight.

EXCEPTIONS TO THE WEIGHT RULE

All automobile or truck tires may be accepted and charged for by weight only. Also apply the clause under "The Right is Reserved."

Ordinary cartons of bread (24 loaf) may be accepted at rate No. 4.

All ordinary automobile fenders (well wrapped with burlap or crated) may be accepted at rate No. 9.

Trunks not over 150 lb. may be accepted at rate No. 12 with a minimum charge of \$1.50.

All deliveries to be made to our depots. In locations where we have no depots and consignee is located conveniently to the highway, deliveries may be made providing we can get a receipt from the consignee; otherwise package will be delivered to nearest bus depot.

Package Rates—Northland Transportation Company

Size	Weight	1	25	50	100	150	200	250	300	350
		to 25 Mi.	to 50 Mi.	to 100 Mi.	to 150 Mi.	to 200 Mi.	to 250 Mi.	to 300 Mi.	to 350 Mi.	to 400 Mi.
(1) 25"	To 3 ¹ / ₂	.25	.25	.35	.40	.50	.60	.70	.80	1.00
(2) 25 To 30"	3-5 ¹ / ₂	.25	.30	.40	.50	.60	.70	.80	.90	1.10
(3) 30 To 40"	5-10 ¹ / ₂	.30	.35	.45	.60	.70	.80	.90	1.00	1.25
(4) 40 To 50"	10-20 ¹ / ₂	.35	.40	.50	.70	.80	.90	1.00	1.25	1.50
(5) 50 To 60"	20-30 ¹ / ₂	.40	.50	.60	.80	.90	1.00	1.25	1.50	1.75
(6) 60 To 70"	30-40 ¹ / ₂	.45	.60	.70	.90	1.00	1.20	1.50	1.75	2.00
(7) 70 To 80"	40-50 ¹ / ₂	.50	.70	.80	1.00	1.10	1.40	1.75	2.00	2.25
(8) 80 To 90"	50-60 ¹ / ₂	.60	.80	.90	1.10	1.20	1.60	2.00	2.25	2.50
(9) 90 To 100"	60-70 ¹ / ₂	.70	.90	1.00	1.20	1.30	1.75	2.25	2.50	2.75
(10) 100 To 110"	70-80 ¹ / ₂	.80	1.00	1.10	1.30	1.50	2.00	2.50	2.75	3.25
(11) 110 To 120"	80-90 ¹ / ₂	.90	1.10	1.25	1.50	2.00	2.50	3.00	3.25	3.75
(12) 120 To 130"	90-100 ¹ / ₂	1.00	1.25	1.50	2.00	2.50	3.00	3.50	3.75	4.25

New England Has Parcel Delivery Service

The New England Transportation Company with its co-ordinated rail and highway service, is leaving the legitimate express traffic to be handled through the regular channels. A parcel delivery service is offered to the public whereby bundles weighing from 20 to 50 lb. and with dimensions from 6 in. to 15 in. square are accepted, subject to published tariffs.

Established ticket agencies are authorized to handle parcels, but the solicitation of this business has thus far not been active. The commodities handled are usually from the industries located along the highway route that care to avail themselves of this service.

The service is restricted to station to station and the shipper delivers the parcel either at the established agency or to coach enroute, and consignee accepts in a similar manner.

A special express compartment would probably be necessary if this field were fully developed, but the limited seating capacity of the motor coach and its primarily intended use for the carrying of passengers precludes for the time being any provision for compartment room.

Charges are accepted at any of the established ticket agencies on routes where the transportation of parcels is authorized, and charges are prepaid. The basis of rates is predetermined by schedules set up by the Traffic Department, indicating three different classes, with rates established with a minimum charge for 30 miles and four additional divisions of charges up to 90 miles and over. For illustration: Class I includes small automobile accessories, brief case, cameras and similar matter. Class II includes automobile tires, traveling bag, clothing, sample cases, etc. Class III includes laundry in individual hampers and radiator shells.

A minimum charge of 25 cents is made for any

article. On a 30-mile haul, the Class I rate is 25 cents, Class II is 40 cents, and Class III is 50 cents. These rates are advanced proportionately until for a 90-mile haul or more, the Class I rate is 50 cents, Class II 65 cents and Class III 75 cents.

Any source of revenue which is legitimate is desirable up to the point where the space required for such shipments does not begin to intrude into the space primarily provided for passenger carrying. The number of stops required in the handling is also an important factor, for the reason that motor coach passengers today prefer a limited stop service, and are very clearly annoyed by frequent and irregular stops to handle parcels, except on those lines where the travel is purely of a local nature. This seems to be about as far as this kind of traffic has been developed on our lines. There is a loss and damage factor which enters in that compels very close attention if claims are to be avoided. In the writer's opinion, our company has gone after about all this business that is worth while, which we are able to handle in our regular service, with our equipment and without necessity of extra details, other than those which are involved in the transportation and accounting of the packages handled.

H. M. WALKER,
General Superintendent, New England Transportation Company.

Reply to Question No. 23

How Close a Check on Maintenance Costs?

"Is it worth while to determine maintenance costs currently for each vehicle, or is it as satisfactory merely to determine maintenance costs for the fleet as a whole? What efforts are made to check the day-to-day performance of each vehicle and each major unit in each vehicle? What employee is responsible for preparing maintenance cost data, and how much of his time is required for this purpose? Is the expense of keeping exhaustive cost records justified by the constructive use to which they are put? In other words, are detailed cost records actually used, or are they merely kept?"

Determines Cost for Fleet as a Whole

We do not think it worth while to determine maintenance cost exactly for each vehicle, but find it satisfactory to determine the cost for the fleet as a whole. The only day-by-day check of performance of each vehicle is a very close watch on gasoline consumption and the drivers' reports.

Our auditing department is responsible for preparing, maintenance costs, with the exception of a record kept by the shop foreman, as to dates and mileage, when certain work has been done on a motor, transmission, rear axle and brakes. This is in order that we may determine whether we are getting the proper mileage on valve grinds, bearing replacements, transmission and differential replacements and brake linings.

While we have a comparatively small operation, covering approximately 500,000 miles per year, we have found in the past four years the records mentioned above have been complete enough for us.

I. B. JAMES,
President and General Manager,
Denver-Colorado Springs-Pueblo Motor Way.

Motor Transport News

Wabash Organizes Motor Coach Operating Company

The Wabash has organized a subsidiary, the Wabash Motor Transportation Company, to operate motor coach service, co-ordinated with train service, between Decatur, Ill., and East St. Louis. L. A. Blatterman, general passenger agent of the Wabash, is secretary-treasurer of the subsidiary company.

Application has been made to the Illinois Commerce Commission for an operating certificate. This is the first occasion upon which the Wabash has proposed to operate a highway service in connection with its railway service.

Parker Regulation Bill Sidetracked in Senate

Passage at this session now unlikely as result of steering committee action

The Parker bill for the regulation of interstate motor vehicle passenger transportation, which passed the House in March and was later favorably reported by the Senate committee on interstate commerce, with amendments, is apparently dead so far as this session of Congress is concerned as the result of the action of the Senate steering committee on May 7 in eliminating the bill from the program of bills for consideration before adjournment.

The action was explained on the ground that the bill involves too many controversial issues to be considered in the time remaining. The bill has been so amended that it is no longer in a form satisfactory to any of the interests which originally joined in urging such legislation, the operators and manufacturers of motor vehicles, the state commissions and the railroads.

In addition to the several amendments which have been proposed from the Senate floor, a minority report was issued by six members of the interstate commerce committee. This minority held that there is no necessity for requiring the issuance of certificates of public convenience and necessity as part of such regulation as is desirable for interstate motor coaches. The so called "grandfather clause" in the bill, it continues, gives present operators the right to continue in business and thus any operators

(Continued on page 1300)

I. C. C. Launches New Probe of Rail-Highway Operations

Investigation, among other objects, is for purpose of recommending legislation to effect more efficient co-ordination

The Interstate Commerce Commission on May 12 entered an order launching an investigation into highway operations, both freight and passenger, conducted by all common carriers subject to the commission's jurisdiction. The order names as respondents "all common carriers by rail, water, or rail and water, subject to the Interstate Commerce Act." It stipulates also that among other objects, the investigation will be "for the purpose of making such recommendations to Congress respecting such legislation as may be necessary or desirable in the public interest to accomplish further or more efficient co-ordination of motor transportation."

The full text of the order is as follows:

"It appearing, That various matters growing out of the co-ordination of transportation of passengers and property in commerce by motor vehicles on the public highways by or in connection or in competition with common carriers subject to

the interstate commerce act, hereinafter called respondents, are being presented to this commission for its consideration as to the legality and propriety thereof; and

"Whereas, this commission is authorized and required to execute and enforce the provisions of the interstate commerce act and to report to the Congress such information and data collected by it as may be considered of value in the determination of questions connected with the regulation of commerce, together with such recommendations as to additional legislation relating thereto as it may deem necessary;

"And Whereas, for the more effectual carrying out of said duties this commission is authorized to inquire into the management of the business of respondents and is directed to keep itself informed as to the manner and method in which the same is conducted;

"It is ordered, That the commission,

(Continued on page 1301)

Pennsylvania General Transit Buys New Jersey Independent

The Board of Public Utility Commissioners of New Jersey recently approved the application of the Pennsylvania General Transit Company, highway subsidiary of the Pennsylvania, for the transfer to it of municipal consents formerly held by Joseph P. Mahan for the operation of two motor coaches between and including Trenton and Seaside Park, N. J. The order also approved of the sale of the Mahan equipment to the railway subsidiary.

In granting the application, the board placed upon the Pennsylvania General Transit Company the same restrictions under which Mahan had operated. These require that no passengers shall be allowed to board the motor coaches who begin and end their trips between Trenton and Medford Lakes and Lakehurst and Toms River. The total length of the route from Trenton to Seaside Park is approximately 55 miles.

Arkansas Commission Allows Cotton Belt Route Extension

The Southwestern Transportation Company, subsidiary of the St. Louis Southwestern, has been authorized by the Arkansas Railroad Commission to extend its motor coach and truck lines from Stuttgart, Ark., to Memphis, Tenn., via Brinkley, Ark., and Forrest City. It is reported that under this permit, the Southwestern Transportation Company will operate over more than 30 miles of the route now used for similar service by the Missouri Pacific Transportation Company, between Little Rock, Ark., and Memphis.

The application of the Southwestern Transportation Company was opposed by the Missouri Pacific. Following the approval of the application, the Missouri Pacific applied to the commission for authority to operate motor coaches over the route now covered by the Southwestern Transportation Company between Texarkana and Memphis.

Net Operating Income of \$956,355 Reported by S. P. Affiliates in 1929

*Railroad report reveals earnings of lines controlled
by Pacific Greyhound Corporation in which
Southern Pacific is interested*

Consolidated net operating income of \$956,355, after deductions for taxes and depreciation, was reported for 1929 by motor coach lines controlled by the Pacific Greyhound Corporation in which latter the Southern Pacific is interested along with the Greyhound Corporation and the Pickwick Corporation. Gross operating income for 1929 was \$9,386,894; operating expenses were \$6,960,408; taxes \$449,457, and \$1,020,673 was deducted for depreciation.

During the past year the companies involved operated 30,000,000 motor coach miles and carried 7,100,000 passengers; a total of 657 motor coaches is included in equipment owned.

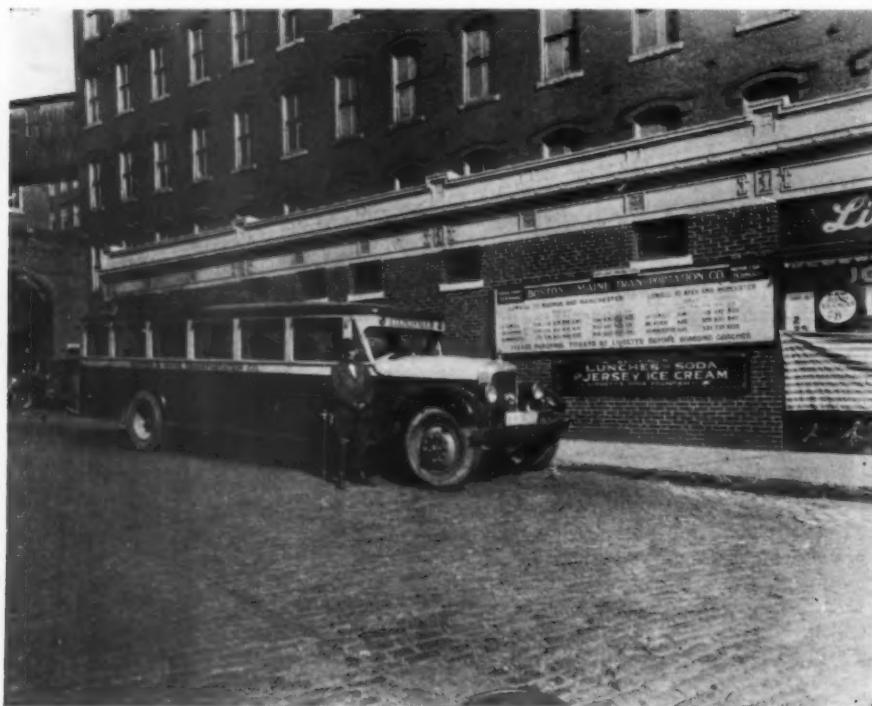
The annual report of the Southern Pacific for 1929 discusses in some detail these highway activities of that road. It lists the several companies controlled by the Pacific Greyhound Corporation, several of which were recently merged under the common operating name of Pacific Greyhound Lines (see *Motor Transport Section* of April 26, page 1041).

The report points out that control of the Pacific Greyhound Corporation is "vested in a board of nine directors and in an executive committee of three members, in both of which bodies each of the three parent companies (Pickwick Corporation, The Greyhound Corporation and Southern Pacific Company) has a one-

third representation." This Pacific Greyhound Corporation was until recently called Pacific Transportation Securities, Inc.

Reference is also made to the acquisition by the Southern Pacific of a one-third interest in the Southland Greyhound Lines. In connection with this affiliation the report states that "It is expected that a co-ordination of rail lines and motor coach operation will be effected, thus improving the service to the public and that the motor coach lines will be extended into new territory and new routes opened up that will give your lines additional traffic; also that in some instances savings will be effected by supplanting present unprofitable steam train operations by motor coaches. While the charter of the operating company permits it to engage in the service of transporting passengers, baggage, freight, mail and express, its operations are now confined to the service of handling passengers, baggage and express, and other services incidental thereto."

Motor truck operations of the Pacific Motor Transport Company, the report states, have been so satisfactory that "It is now contemplated that the service will be further extended, early in 1930, to cover the territory between San Francisco and many interior points in California, and such other points as conditions may warrant."



Motor Coach Station of the Boston & Maine at Lowell, Mass.

Rail-Motor Coach Tours Planned by the Southern

The Southern Railway plans a series of combination rail and motor coach tours through the Southern Appalachian Mountains, in order to stimulate passenger traffic during the summer months. The arrangement provides for the co-ordination of Southern passenger train service with the regularly established motor coach schedules in operation over the highways extending from the line of the Southern into the mountains.

Tickets for the service will be sold from all the principal stations on the Southern system and both individual and group rates are in effect. The railway has issued attractive folders showing the various tours in detail and views of the scenery along the routes.

Spokane, Portland & Seattle Seeks Washington Coach Route

The Spokane, Portland & Seattle Transportation Company, subsidiary of the Spokane, Portland & Seattle Railway, has applied to the Washington Department of Public Works for authority to operate motor coaches between Yakima, Wash., and White Salmon. This route is proposed as a feeder to the railway, the connection between the motor coach line and the railway being made at White Salmon.

Wisconsin Commission Taking Steps to Enforce Coach Rules

According to press reports, the Wisconsin Railroad Commission is preparing to take steps to enforce the provisions of its rules governing the operation of motor coaches in the state. One operator has already been called before the commission to show cause why his operating certificate should not be revoked, on account of alleged violations of the commission's operating rules.

Southwestern Transportation Company Granted Texas Permit

The Texas Railroad Commission has granted the application of the Southwestern Transportation Company, subsidiary of the St. Louis Southwestern, for a permit to operate motor trucks between Tyler, Tex., and the Texas-Louisiana state line. This line will be part of the through motor truck route which the Southwestern Transportation Company is reported to be establishing between Tyler and Shreveport, La., via Longview, Tex., and Marshall.

Travelers Aid Bureaus Opened in Several Coach Terminals

Motor coach travel has increased to such an extent in recent years that it has brought new problems to travelers aid

Chicago & Alton Highway Services Are Withdrawn

The Chicago & Alton, which has been operating several motor coach lines in recent years through the medium of a subsidiary, the Alton Transportation Company, has, temporarily at least, discontinued its highway operations. Its operating certificate covering the route between Jacksonville, Ill., and East St. Louis, has been sold, and the equipment has been stored at Bloomington, Ill.

The reasons for the withdrawal of the Alton from motor coach operation are understood to be inability to secure a number of operating certificates for which it has applied, and also its inability to reduce train service in proportion to the establishment of motor coach service.

workers, according to the annual report of the National Association of Travelers Aid Societies.

As a result of this new transportation development, full-time information and welfare service bureaus are being installed in several metropolitan motor coach terminals. One of these latter was recently opened at the Capitol terminal, New York, and similar agencies are maintained at motor coach terminals in 21 other cities.

Public Service Interstate Co. Acquires New Jersey Permits

The Public Service Interstate Transportation Company was recently granted, by the Board of Public Utility Commissioners of New Jersey, approval for the transfer to it of municipal consents, held by the Parlor De Luxe Coach Company, Inc., for the operation of three motor coaches between Atlantic City and Camden, N. J., and Philadelphia, Pa.

In permitting the transfer, the board imposed upon the Public Service Interstate Transportation Company the same conditions under which the Parlor De Luxe Coach Company, Inc., had operated. The present fares are also to remain in effect.

Safety Record of Ohio Motor Coaches Improved During 1929

Following the issuance of definite safety orders for motor coach operation by the Public Utilities Commission of Ohio, a year or more ago, the safety of coach operation in that state has shown a considerable improvement, according to a statement by Frank W. Geiger, chairman of the commission. During 1929, motor coaches in Ohio carried a total of 32,375,531 passengers, only 26 of whom lost their lives in accidents. This is at the rate of one fatality for every 1,250,000 passengers carried. During the year, the 1,032 motor coaches operated in Ohio traveled a total of 56,224,254 miles.

Missouri Pacific Transportation Co. Continues Its Expansion Program

Authority recently received to establish trucking services in Texas and in Arkansas—New motor coach lines also sought

The Missouri Pacific Transportation Company, motor coach operating subsidiary of the Missouri Pacific, is continuing to expand its operations in many directions. It has now received recognition from the Railroad Commission of Texas as a "common carrier express company" which qualifies it for the operation of motor trucks in freight service. The commission likewise granted the application of the company for permission to operate motor trucks for the transportation of freight between San Antonio, Tex., and Laredo, a distance of 155 miles. The motor trucks will operate over the highway which parallels the Missouri Pacific railway line. The motor trucks will perform a service similar to that of competitive truck lines, providing both store door collection and delivery of freight at the station-to-station railway freight rate.

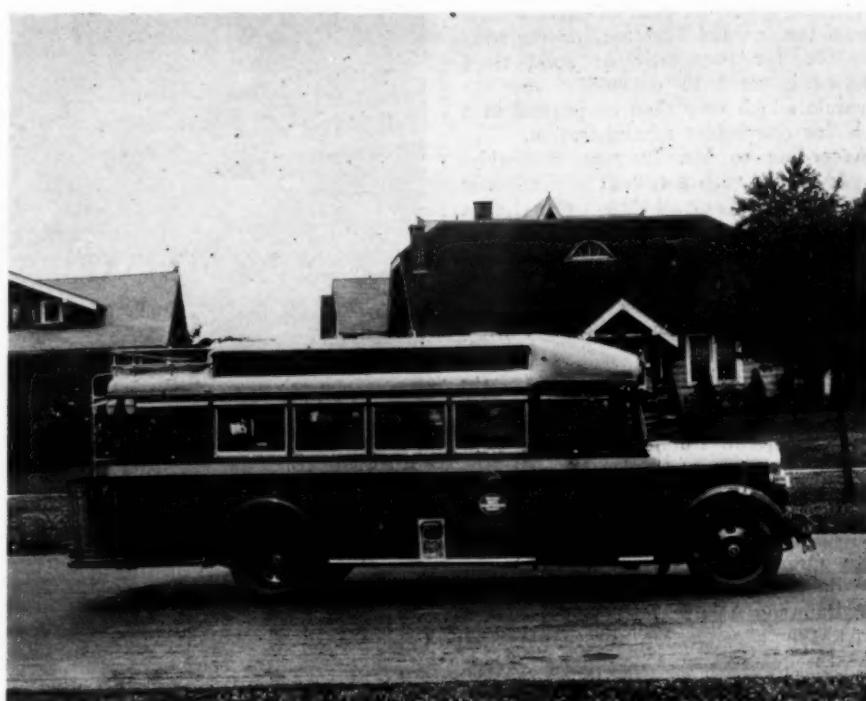
In Arkansas, the transportation company has been authorized to establish store door pick-up and delivery service for freight shipments between Little Rock, Ark., and Russellville. Under the plan approved by the commission, the transportation company will contract with local truck operators for pick-up and delivery service in terminals and will contract with the Missouri Pacific for the line haul between stations.

In the meantime, the expansion of the already extensive motor coach operations

of the Missouri Pacific Transportation Company is continuing. Application has been made to the Missouri Public Service Commission for a permit to operate motor coaches between Farmington, Mo., and Silvia. The Texas Railroad Commission has approved the application of the transportation company for authority to purchase the Bee Line Coach Company, operating motor coach lines between Palestine, Tex., and Jacksonville, and between Jacksonville and Marshall. Previously the transportation company had purchased the South Texas Bus Company's line between Marshall and Texarkana.

With these additional motor coach lines, together with lines already in service, the Missouri Pacific and the Missouri Pacific Transportation Company have established through rail and motor coach service from Laredo, Tex., to St. Louis. Under this arrangement, passengers board Missouri Pacific trains at Laredo and transfer at Palestine to motor coaches operating on through schedules to St. Louis, Mo. Similar service is proposed from Brownsville, Tex., Corpus Christi and Houston to Memphis, Tenn.

In Nebraska, the Missouri Pacific recently obtained permission to experiment with special combination passenger, mail, baggage and express motor coaches in substitution for train service on its branch line between Lincoln and Union.



A Missouri Pacific White, Model 65

Taxation Investigation by Bureau of Standards

Uniform system sought for rating of different motor vehicles for assessment

The Bureau of Standards of the United States Department of Commerce, in co-operation with the State of Connecticut, is investigating a uniform system of rating motor vehicles for taxation, according to a recent statement of George K. Burgess, director. Mr. Burgess' comment on the investigation was summarized in a recent issue of the United States Daily.

He pointed out that the investigation sought to find a simple method of distributing total tax levy, determined by the State, among the various classes of vehicles and the units within a class as nearly as possible according to the amount and character of each vehicle's use of the streets and highways.

The major factors involved in a vehicle's use of the roads were considered to be (1) the weight of the loaded vehicle; (2) its annual mileage and (3) the type of tires used.

The Bureau's report outlines a method for estimating the equitable relation between gross weight and total annual tax for vehicles traveling an average number of miles per year. By imposing a sufficiently high fuel tax so that it alone is nearly equal to the total tax desired for the lighter cars, a nominal registration fee is made possible for this class, and the best practical distribution of tax according to miles traveled is insured for all vehicles.

An increasing scale of registration fees for the heavier vehicles is generally necessary. A general formula involving gross weight which, by a proper change of constants, may be used to express total annual tax, annual fuel tax, or registration fee for pneumatic or solid tired vehicles is used in computing the tax schedule which may then be printed in a table for convenient administration.

According to Mr. Burgess, the widespread use of such a system would insure consistent taxes for all classes of vehicles, provide for uniform basic methods of rating vehicles and collecting fees throughout the country, and yet permit the several States to select tax schedules suited to their individual requirements.

Approval of Municipal Consents Denied New Jersey Independent

The Board of Public Utilities in New Jersey in a recent order denied the application of John H. Abrams for approval of municipal consents which had been obtained from Bloomfield, East Orange and Irvington, N. J., for the operation of four motor coaches on the Paterson-Asbury Park route.

At the hearing on the application, the Public Service Coordinated Transport, the Central Railroad of New Jersey, and the Pennsylvania objected to the proposed operation contending that

existing facilities were sufficient to serve the transportation needs of the communities involved and that the proposed operation would compete with these agencies. The Jersey Central in an exhibit showed its ticket sales at Newark for Asbury Park during the period from May to October for the years 1923 to 1929. In 1923, a total of 88,140 tickets were sold for the trip involved while in 1929, but 50,449 were sold. Evidence submitted by the Pennsylvania showed the character of service rendered by present transportation agencies between Newark and Asbury Park and also included an exhibit showing the comparative ticket sales from Newark to Asbury Park and Ocean Grove. This latter showed that the 1925 ticket sales were 44,300, whereas in 1929 the comparable figure was 25,088.

"The testimony is conclusive in respect to the fact that the demand for service is almost entirely seasonal and during the winter months the traffic from Paterson to Asbury Park is very limited and it is questionable whether or not there would be any demand for service between Bloomfield, East Orange, Irvington and Asbury Park," the Board states.

"The basis of approval is defined by statute to be necessity and convenience," it continues. "The community of interest between Asbury Park and the municipalities in question is limited to excursion travel only in the summer months and there is now adequate means of travel between these points. The proofs submitted by the petitioner are not sufficient to warrant this Board in approving of the municipal consents of the Town of Bloomfield, the City of East Orange and the Town of Irvington, therefore the application is denied."

U. P. Subsidiary Buys Minnesota Coach Line

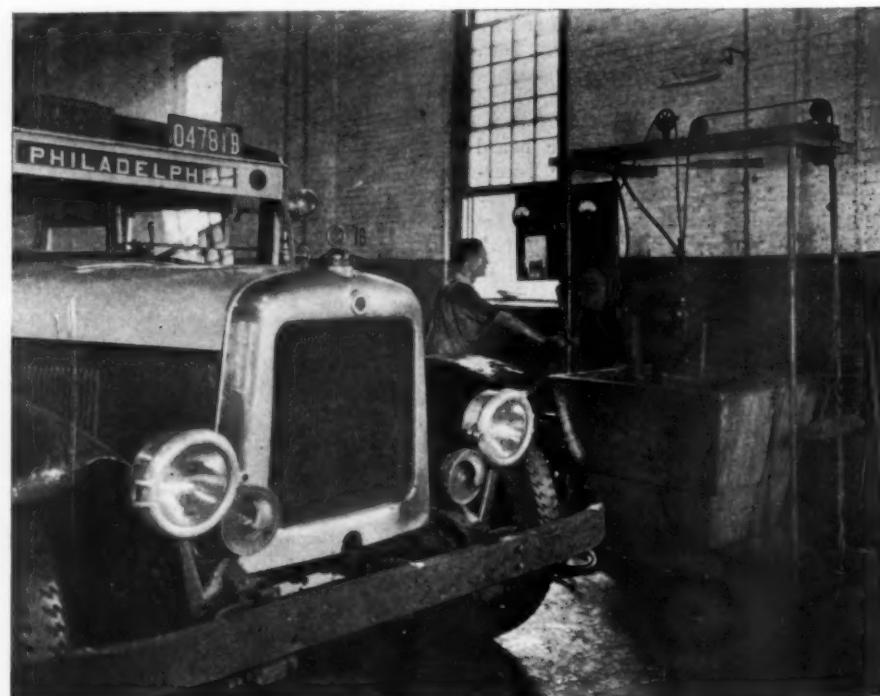
Purchase marks first direct entry of Interstate Transit Lines into that state

The Interstate Transit Lines, motor coach operating subsidiary of the Union Pacific and the Chicago & North Western, has received authority from the Minnesota Railroad and Warehouse Commission to acquire the inter-city motor coach lines of the Sioux Falls Traction System, operating between the Minnesota-South Dakota state line through Beaver Creek, Luverne and Adrian, to Worthington, Minn. The acquisition of this line marks the first entry of the Interstate Transit Lines directly into Minnesota, although it has previously made direct connections at Fairmont, Minn., with the Northland-Greyhound Lines to provide through service from Omaha, Neb., to the Twin Cities.

In Colorado, the application of the Interstate Transit Lines for permission to operate motor coaches between Greeley, Colo., and Sterling was denied by the Public Utilities Commission of that state.

Another Union Pacific motor coach operating subsidiary, Union Pacific Stages, began on May 1 the operation of motor coaches between Twin Falls, Idaho, and Bliss, via Jerome, Wendell and Gooding. Eleven new motor coaches, each with a capacity of 34 passengers, have been put in service between Boise, Idaho and Salt Lake City, Utah.

The Union Pacific recently placed an order for six 15-passenger motor coaches with the Nebraska Buick Auto Company, for operation by the Interstate Transit Lines in Nebraska.



In the Philadelphia Garage of the Greyhound Lines
Device known as "water barrel" enables mechanics to test pulling power and ascertain how coach will function on road.

New Automotive Facts and Figures Published

Latest edition covers statistics of the industry as of December 31, 1929

The 1930 edition of "Facts and Figures of the Automotive Industry," published by the National Automobile Chamber of Commerce, is now available for distribution. It is a concise but comprehensive compilation of all important automotive statistical data.

The total number of motor coaches in operation in the United States at the close of 1929 is placed at 92,325; this compares with a figure of 85,636 as of December 31, 1928.

The total number of common carrier motor coaches in service at the close of 1928 and 1929 was respectively 44,486 and 46,500. The number of sightseeing vehicles is placed at 2,750 for each of the past two years. This brings the total motor coaches in revenue service at the close of 1929 to 49,250 as against 47,236 at the close of 1928. The remainder of the 92,325 total are classified as follows: School, 40,875; hotel, 800; industrial, 1,000 and miscellaneous, 400.

Traffic statistics presented reveal that motor coaches in revenue service carried an estimated total of 1,768,000,000 passengers 10,835,000,000 passenger miles during 1929 as compared with 1,826,000,000 passengers and 10,050,000,000 passenger miles in 1928.

Truck figures show that 826,811 of these commercial vehicles were produced during 1929 as compared with 588,983 in 1928. Of the 1929 total 523,691 or 63.4 per cent were 1½- to 2-ton trucks. Only 0.3 per cent were of 5-ton and 1.2 per cent more than 5-ton capacity. In prior years the greater

proportion of trucks produced falls in the "one ton and less than 1½ ton" class, the percentage being 53.2 in 1928 and 64.3 in 1927. Last year, however, as noted above, the shift to the next larger type came. A total of 3,379,854 motor trucks were registered in the United States at the close of 1929 as against 3,113,999 at the close of the previous year.

Some statistics of motor truck movements of live stock and farm produce are given. At 12 of 13 markets listed the live-stock receipts by motor truck increased over 1928 while in all but one (Pittsburgh) the receipts by rail declined. For example at Buffalo livestock receipts by truck in 1929 increased 11.6 per cent over 1928 whereas rail receipts fell 13.5; at Cleveland the truck receipts increased 22.2 per cent and the rail receipts fell 17 per cent; at Chicago the respective figures were: Truck increase, 30.7 per cent; rail decrease, 17.4 per cent. The summary lists a total of 14,510,524 head of live-stock hauled by truck in 1929, an increase of 19 per cent over 1928. This movement involved 1,200,000 truck loads and 60,500,000 truck miles. The length of haul ranged from one to 300 miles with an average haul of 50 miles.

A section is given over to automotive freight on railroads. This finds the automotive industry responsible for 3,667,792 carloads of freight or 10 per cent of the total carload traffic originated in 1929. From this business it is pointed out the railroads during the past year received \$204,528,723 in revenue.

Motor vehicle taxes are also emphasized in which connection it is found that total levies on motor vehicles in 1929 amounted to \$929,400,000 as compared with \$798,000,000 in 1928. A table in this section shows that total motor vehicle taxes during the past ten years have amounted to \$5,881,869,000.



Yellow Motor Coach of Type Recently Purchased by the P. R. T., Pennsylvania Affiliate

Class Rates for Trucks Prescribed in Arkansas

Commission applies Western classification to common carrier highway lines

Class rates subject to the Western classification have been established, effective May 15, for all common carrier truck lines operating in Arkansas, by a recent order of the Arkansas Railroad Commission. The rates thus fixed are to be applied for either single or joint line hauls; they are to be governed by the current Western classification and do not include the four per cent gross income tax.

The rates per 100 lb. prescribed by the Commission for the four classifications are as follows: For distances of five miles or less, first class, 36 cents, second class, 31 cents, third class, 25 cents, fourth class, 20 cents; for 100 miles, 79, 67, 55 and 43 cents, for the four classes respectively; for 500 miles, the maximum distance considered by the commission, first class, \$1.74, second class, \$1.48, third class, \$1.22, and fourth class, 96 cents.

The Commission's order provides that when two or more carriers operate between the same points, but over different highways, the distance scale used shall be that of the shortest highway. The handling of high explosives by motor vehicles on the public highways is prohibited by another section of the order.

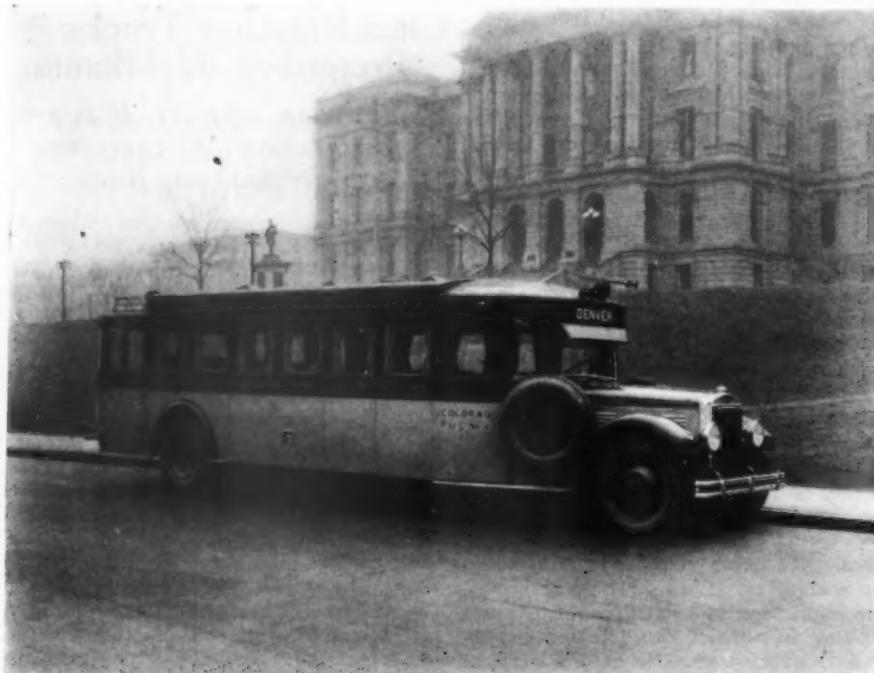
Route Extension of New Jersey Independent Approved by Board

The Board of Public Utility Commissioners of New Jersey in a recent order granted the application of Charles H. Shinn for the approval of municipal consents to operate motor coach lines between Mt. Holly and Hammonton, N. J. The route is an extension of an existing run between Trenton and Medford Lakes, thereby forming a continuous route from Trenton to Hammonton.

Pickwick Greyhound Interests Plan \$1,000,000 Expenditure

Improvements and expansions in motor coach service and facilities involving an expenditure of approximately \$1,000,000 within the next few months will be undertaken by the Pickwick-Greyhound interests, according to a recent announcement by Charles F. Wren, president of Pickwick Stages System and Pickwick-Greyhound Lines. The program calls for the acquisition of several small independent motor coach lines, the installation of modern motor coaches and other equipment, and the erection of several new motor coach stations, shops, garages and other facilities.

The initial step in the plan was the acquisition by the Southland Greyhound Lines of the San Antonio-Corpus Christi line which was taken over April 1. This same subsidiary also acquired an option on the Pecos-San Antonio motor coach



Combination Express and Passenger Motor Coach in D. & R. G. W. Highway Service

line on the Old Spanish trail route. This will give southern California and the Pacific coast a new direct motor coach service over the Pickwick and Greyhound lines to the Gulf of Mexico, Mr. Wren stated. The Southland Greyhound lines now has approximately 200 motor coaches in operation over 3,100 route miles; it also has a \$250,000 motor coach terminal at San Antonio, acquired several months ago in the amalgamation of a number of independent motor coach lines. Another \$250,000 terminal is planned at Fort Worth and smaller stations will be erected at Laredo, Orange and other Texas cities and Lake Charles, La.

Rail-Highway Co-ordinating Plans of Japanese Railways

The Department of Railways of the government of Japan is developing plans for the co-ordination of highway motor coach operations in that country with train services on government and private railway lines. These plans are revealed in a review of the Japanese transport situation published by the United States Department of Commerce in a recent issue of Commerce Reports.

Leo D. Sturgeon, consul at Tokio and author of the review, finds that most remarkable of all moves "is the present plan of the Department of Railways, still in the formative stages, to develop motor coach services in a large number of places where railway extensions were planned originally." After an outline of the present status of these co-ordinating plans the article reaches the conclusion that "the railway authorities appear to be well on their way toward the completion of plans looking to a unified network of co-operating and co-ordinating means of transportation, and the system as a whole is likely

to be sounder economically than in previous years."

Investigations of the relationship between rail and highway transportation were commenced in 1926 by the government railway authorities. These investigations, the article states, revealed that, while private railway lines were threatened with highway competition, the government railways were in no immediate danger. The authorities nevertheless moved to bring about transport co-ordination and to protect the private railways from the inroads of motor coach competition. The high cost of railway construction has caused many new projects to be discarded in favor of motor coach routes.

Although plans for the co-ordination of motor coach lines projected in conjunction with the State railways are not complete, it is understood that the authorities are proceeding with the following provisions in view: (1) Motor coach lines are to be the branches and not the main line projects; (2) motor coach lines are to engage exclusively in passenger carrying, not in transportation of industrial or the commercial articles; (3) motor coach lines shall be licensed only for distances under 20 miles (this rule is expected to vary); and (4) motor coach lines to be licensed must be operated on routes necessary to pleasure resorts, but not on routes important from an industrial or commercial standpoint.

The above stipulations, which in the end will very likely prove elastic, shows that at present the Government does not intend to encourage the entrance of motor transport companies in the freight field. It also gives indication that the Government does not intend, for the present at least, to monopolize the operation of the numerous motor transport services that are to operate as feeders or extensions of the State railways. On the other hand, care-

ful regulation of services instituted is obviously contemplated.

The railway authorities are said to be planning to introduce into the coming session of the Diet a bill for the control of the many motor coach lines that have been sanctioned. At the present time the prefectural governments are allowed to exercise control over lines not more than 20 miles in length, but under the new proposal of the Government all motor coach lines would come under the immediate supervision of the railway department. This plan would give the railway department full authority to work out the transportation problems of the country in a unified way and in such manner as would protect existing railway services from unfair competition, and, on the other hand, would encourage highway operations where such a course seems advisable.

Parker Regulation Bill Sidetracked in Senate

(Continued from page 1295)

now installed on a route would remain in control of that route perhaps permanently.

The report continues to point out that regulation should start gradually and asserts that a provision for certificates of public convenience and necessity was not required of railroads for several years after the inauguration of regulation. The minority further opposes the failure of the bill to grant the power to make rates and contends again in concluding that there is no public demand for the provision that a certificate be required. The demand for a provision authorizing the commission to grant certificates of public convenience and necessity comes from the railroad and motor coach owners now engaged in interstate motor coach business, says the report.

The elimination of the bill from the steering committee program precipitated considerable discussion in the Senate on May 9. In the course of this debate Senator Watson of Indiana, majority leader, pointed out that reports drawn by the steering committee are merely suggestions which a majority of the Senate may override at any time. He continued to say, however, that amendments to the motor coach bill made it appear that it would be almost impossible to pass it at this session, although he thought that it may be reinstated on the program when some other measures are disposed of. Senator Couzens of Michigan, chairman of the interstate commerce committee, which reported the bill favorably to the Senate, explained that the motor coach bill had been given a place on the program before the minority report on it had been filed.

This speaker continued to point out that there were three distinct views on the bill which were highly controversial. The House bill required the issuance of a certificate of public convenience and necessity in all cases, he said. A majority of the interstate commerce committee of the Senate said that this would lead to

monopolies and adopted an amendment which would not require a motor coach line to secure such a certificate if there was no other competition. Another group thought no certificates should be required, he added.

I. C. C. Launches Probe of Rail-Highway Service

(Continued from page 1295)

upon its own motion, enter upon an investigation into and concerning the general matter of co-ordination of motor transportation of passengers and property on the public highways by or in connection or in competition with respondents, whether such motor transportation is performed by respondents directly or indirectly or through subsidiary or affiliated companies, or through control in any manner in whole or in part, or by other operators of motor vehicles, such investigation to include an inquiry into: The arrangements under which such motor transportation is performed by or in connection or in competition with respondents, and the legality and propriety thereof; the corporate organization, and financial and business relationship existing between respondents and corporations or the stockholders thereof engaged in motor transportation of passengers or property by or in connection or in competition with respondents; the extent to which the property of respondents or the time of employees thereof is devoted to motor-vehicle operations to supplement, replace, or curtail the rail, water, or rail-and-water operations of respondents, or as feeders or distributing agencies thereof; the rates, fares, and charges, whether local, proportional, or joint, the schedules thereof, and the manner of filing and publishing the same; the extent and effect of motor-vehicle competition upon the traffic and revenues of respondents; the manner in which accounts of revenues and expenses of such motor-vehicle operations are kept; whether the revenues from such motor-vehicle operations are compensatory for the cost thereof; and such other matters as may be relevant to a full and complete investigation into the co-ordination of motor transportation; with a view to making such findings and taking such appropriate action as the facts developed by such investigation may warrant, and for the purpose of making such recommendations to Congress respecting such legislation as may be necessary or desirable in the public interest to accomplish further or more efficient co-ordination of motor transportation;

"It is further ordered, That all common carriers by rail, water, or rail and water, subject to the interstate commerce act, be, and they are hereby, made respondents to this proceeding; that a copy of this order be served upon each of said respondents; and that notice to the public be given by posting a copy hereof in the office of the secretary of the commission;

"And it is further ordered, That this proceeding be assigned for hearing at such times and places as the commission may hereafter direct."

Ohio Commission Grants Trucking Certificate to the Express Agency

Permit issued where no certificated truck lines were available to handle express business over abandoned rail route

The Ohio Public Utilities Commission in a recent decision granted the Railway Express Agency, Inc., permission to operate motor truck service between certain points in that state where train service had been abandoned and where no other facilities are available for use by the Express Agency.

This same commission in a somewhat similar case recently refused to permit the Express Agency to operate motor trucks in territory where train service had been abandoned but where other truck lines were operating under certificates of convenience and necessity previously issued by the commission (see *Motor Transport Section*, April 26, page 1038). In this latter case the commission held that the services of the truck lines were available to the Express Agency in a manner similar to the services previously afforded by the railroad.

In the present case the commission states that on Jan. 21, 1930, it permitted the Lakeside & Marblehead to abandon its passenger trains on which express service had been rendered to Lakeside and Marblehead.

"This hearing on the abandonment of the train service," the commission states in its order, "was heard prior to the decision of the Commission on the application of the express company for a certificate between Canton and Dellroy and before there had been any adjudication of the

rights of the express company to continue service by truck where trains had been taken off by the commission, or the supreme court of the State.

"Under these conditions and upon the representation by the express company that it owned and operated a truck for pick-up and delivery service in the City of Port Clinton and that it was willing to use this truck for the continuance of the service to Marblehead and Lakeside, until there could be a determination of the rights of the company under the law and the needs of the community, if such service were within the provisions of the motor transportation law, the express company was requested by the commission to render such service until an application for a certificate of convenience and necessity could be filed and a hearing held upon the same. For this reason the commission feels that no prejudice should run against the express company for continuing to render the service to the community at the request of the commission. The commission interprets section 614-88 as extending to it authority in the instant case to permit such temporary operation.

"The commission has had in mind at all times the interest of the community as paramount consideration. Express stations have been established at Lakeside and Marblehead and have been operating many years. Lakeside is a Summer re-



Along a Route of the Utah Parks Company, Union Pacific Subsidiary

sort of considerable size, being a community of only a few hundred people in the Winter time and of 6,000 or 7,000 in the Summer time. This condition makes an unusual demand for express service, even for a community of this size.

"Since the abandonment of the train service by the Lakeside & Marblehead Railroad Company there is available for the use of the express company no carrier service by rail. The Ohio Public Service Company operates an interurban line passenger service into this community, but has no service available for the use of the express company.

"The Ohio Public Service Company did not protest in this case, and the only protestants were the Fletcher Cartage and Storage Company of Sandusky, Ohio, which operates a truck line between Sandusky and Cleveland and which has applied for an extension throughout this territory for the trucking business, claiming to haul all kinds of articles and therefore if granted a certificate would have a preemption on the property handled by the express company, and the Ohio Association of Commercial Haulers. Mr. E. J. Shover appeared for the Ohio Association of Commercial Haulers, entering a protest, although there is no member of the association certificated to operate through the territory and there would be no competition which might be affected by the granting of the certificate.

"The proposed tariffs, freight rates and the rules, regulations and classifications for the proposed operation are the same as the rates, tariffs, regulations and classifications now applicable to the transportation of express by the company by railroad service and in accordance with the official classifications, rates and regulations on file with the Interstate Commerce Commission and the public utilities commission of Ohio.

"In fact, the service which the express

company seeks to render is a part of its highly integrated express service throughout the country and is simply joining this community by truck with the whole territory which the express company serves by rail and otherwise throughout the whole of the United States and many foreign countries.

"It is the opinion of the commission, therefore, that there are no common carriers by rail or otherwise operating in or throughout this territory, rendering to the public the service which the express company seeks to render; that the express company is the only one which can adequately serve this community as far as express business is concerned; that the express company is adequately equipped to render such service as applied for to the community, as a part of its integrated service throughout the country, and that there is a necessity and convenience shown in the record for such service.

"An order will issue, therefore, granting the certificate of convenience and necessity to the applicant to operate a motor transportation company carrying property between Port Clinton, Lakeside and Marblehead, Ohio."

Orders for Equipment

THE READING TRANSPORTATION COMPANY has ordered five Mack club parlor coaches.

THE GREYHOUND MANAGEMENT COMPANY, Chicago, accepted delivery of one 37 passenger A.C.F. parlor motor coach.

THE SANTA FE TRANSPORTATION COMPANY has received nine Type W motor coaches, five of the parlor type and four of the observation type, from the General Motors Truck Company.

THE FONDA, JOHNSTOWN & GLOVERSVILLE has accepted delivery of one Mack Model AB 25-passenger city type coach.

THE PICKWICK-GREYHOUND LINES, Kansas City, Mo. has accepted delivery of one Mack Model BC 23½" motor coach chassis.

THE JERSEY CENTRAL TRANSPORTATION COMPANY has accepted delivery of five Mack Model BK 29-passenger motor coaches.

THE GREYHOUND MANAGEMENT COMPANY, Chicago, has accepted delivery of 12 Mack Model BK 33-passenger motor coaches.

THE NEW ENGLAND TRANSPORTATION COMPANY has received seven Type 250 observation coaches from the General Motors Truck Company.

THE READING COMPANY has accepted delivery of four Type U city service motor coaches from the General Motors Truck Company.

THE MISSOURI PACIFIC TRANSPORTATION COMPANY has received a Type 250 parlor motor coach from the General Motors Truck Company.

THE MOTOR TRANSIT MANAGEMENT COMPANY, operating the Greyhound Lines, has received 28 Type 250 parlor coaches from the General Motors Truck Company, while the Pickwick-Greyhound Lines have received 10 motor coaches of this type.

Among the Manufacturers

Mercedes Benz Company, Inc., have appointed the National Railway Appliance Company, 420 Lexington Avenue, New York, as their representative for the sale of Diesel engines and motor coaches and trucks equipped with Diesel motors.

Lon R. Smith has been appointed assistant director of sales for the Hercules Motors Corporation, with headquarters at Canton, Ohio. His new duties will include supervision of export sales and sales promotion among Hercules distributors.

James C. Elverson has been appointed general manager of the American Viscometer Company, Inc., New York, a subsidiary of the General Motive Control, Inc. He formerly served as general manager of the industrial division of the Motometer Company, which position he held since 1920.

Henry Krohn, director of sales for the Federal Motor Truck Company, has been appointed vice-president in charge of sales. Mr. Krohn is well known in the automotive field, having been for 17 years vice-president in charge of sales for the Paige-Detroit Motor Car Company.



Wide World
European Motor Coach Shown Recently Upon Its Arrival in Berlin
After a Run from London

George F. Russell has been appointed sales manager of the **White Company**, with headquarters at Cleveland, Ohio. Mr. Russell entered the employ of the White Company in 1914 as assistant manager of the then western sales department. Since that time he has served successively as manager of the southeastern district, assistant general manager, vice-president in charge of sales and as vice-president of the three sales regions which were consolidated into the central region.

R. L. Wetzell has been appointed sales promotion and advertising manager of the **Dayton Rubber Manufacturing Company**, succeeding **Edwin B. Self**, who has resigned to establish his own business in Chicago. Mr. Wetzell has been connected with the Dayton Rubber Manufacturing Company for five years having been for three years assistant sales promotion and advertising manager, and serving for two years prior to his recent promotion as assistant vice-president in charge of merchandising.

R. M. Heinrichs, formerly connected with the Bendix Corporation as assistant to the vice-president in charge of sales, has been appointed general manager of the newly formed **Bendix-Westinghouse Automotive Air Brake Company**. Mr. Heinrichs is a graduate of the engineering school at the University of Illinois. His connection with the Bendix Corporation covered a period of five years, and previous to that time he served with the Goodman Manufacturing Company of Chicago. As general manager of the new company, Mr. Heinrichs will have at his disposal the engineering and service departments of both Bendix and Westinghouse. Other officers of the company are as follows: **Vincent Bendix**, president; **S. G. Down**, vice-president; **W. J. Buettner**, secretary and treasurer.

Motor Transport Officers

A. M. White has been appointed district manager of the Union Auto Transportation Company, with headquarters at Phoenix, Ariz., succeeding **P. E. Beutke**, resigned.

William T. Hoops, president of the L. C. L. Corporation, has been elected chairman of the executive committee of the United States Freight Company. Mr. Hoops is also chairman of the executive committee of the Universal Carloading & Distributing Company, a subsidiary of the United States Freight Company.

F. E. Triebner, district manager of the **White Company**, at Pittsburgh, Pa., has been appointed acting regional manager for the central region, with headquarters at Cleveland, Ohio, and **R. L. Fullerton** has been appointed acting district manager at Pittsburgh. Mr. Triebner has been connected with the White Company for the past 13 years,



Co-ordinated Service on the Middletown & Unionville at Middletown, N. Y.

having joined the company in November, 1917, in the special sales department. In 1923 he was promoted to

manager of the national sales department, and in 1926, he became district manager at Pittsburgh.

General Officers of Pacific Greyhound Lines Elected

Consolidation of several motor coach lines controlled by Pacific Greyhound Corporation under the common name of Pacific Greyhound Lines will result in the consolidation of departments and general offices of the constituent companies. Officers of the new company (the Pacific Greyhound Lines) are: **T. B. Wilson**, president; **Earl A. Bagby**, vice-president and general counsel; **M. M. McKinstry**, secretary and treasurer; **L. D. Jones**, general manager; **A. B. Frey-schlag**, general superintendent; **H. A. Wooster**, general traffic manager; **M. J. Donoghue**, manager of development.

Companies to be merged into the Pacific Greyhound Lines are: Pickwick Stages System, California Transit Company, Pacific Auto Stages, Golden Gate Stages, Peninsula Rapid Transit Company, Pacific Coast Motor Coach Company, Kern County Transportation Company, Calistoga & Clear Lake Stages Company, Southern Pacific Motor Transport Company, Oregon Stages and Boyd Stage Lines. The combined route mileage of the foregoing companies as of May 1, was 8,473; an average of 2,220,240 motor coach miles a month are involved in the combined operations.

Transfer of assets and operating rights of these various companies to the Pacific Greyhound Lines is expected to eliminate duplication of service and, by co-ordination of efforts, to increase the availability of existing equipment. The merger is also expected to eliminate separate accounting departments and general offices and to consolidate all accounting and management in one headquarters. When the transaction is closed the Pacific Greyhound Corporation will own all the stock of the Pacific Greyhound Lines and the present oper-

ating companies will be dissolved. The Greyhound Corporation, the Pickwick Corporation and the Southern Pacific each own one-third interest in the Pacific Greyhound Corporation.

T. B. Wilson who heads the Pacific Greyhound Lines is well-known in Pacific coast motor transport circles, as he has been president of the Pacific Trans-



T. B. Wilson

portation Securities Company, Inc., (now the Pacific Greyhound Corporation) since this holding company was organized in June, 1929. Mr. Wilson entered the service of the Southern Pacific as a clerk in the passenger department, leaving the railway in 1912 to become an engineer in the United States War Department. He returned to the Southern Pacific as a clerk in 1915 and later was promoted to traveling auditor in the accounting department. During

the World War he served as a captain in the United States army, again entering the service of the Southern Pacific in the accounting department after the conclusion of his military service. In 1922, Mr. Wilson was promoted to chief

operation and competition. In May, 1927, he was appointed vice-president and manager of the Southern Pacific Motor Transport Company. When the Southern Pacific joined with the Greyhound, Yelloway and Pickwick Lines in



Earl A. Bagby



M. M. McKinstry



August C. Fruehauf



L. D. Jones



A. B. Freyschlag



H. A. Wooster



M. J. Donoghue

clerk to the superintendent of the Joaquin division. In February, 1924, he was promoted to supervisor of transportation, with headquarters at San Francisco, devoting a large part of his time to the study of motor coach and truck

June, 1929, and organized the Pacific Transportation Securities Company, Inc., Mr. Wilson was elected president and has since continued as executive head of this company and its successor, the Pacific Greyhound Corporation.

Obituary

August C. Fruehauf, chairman of the board of directors of the Fruehauf Trailer Company, died on May 11. Mr. Fruehauf was born in Fraser, Mich., in 1868. In 1895, he opened a small shop in Detroit, Mich., for the manufacture of wagons and continued in the building of heavy duty, horse-drawn vehicles until the coming of the motor truck.

In 1914, he designed and built a semi-trailer, a two wheel platform vehicle for use in connection with a light motor truck and since that time the trailer idea was carried forward by him. Mr. Fruehauf was appointed chairman at a meeting of the board of directors of the Fruehauf Trailer Company on July 25, 1929, the position he held until his death.

Trade Publications

Brake Re-Liner's Manual.—The 1930 edition of the Brake Re-liner's Manual issued by Johns, Manville Corporation, New York is ready for distribution. Separate chapters explain the fundamentals of brake adjustment, installation of new lining, including recommendations as to the proper type of lining to use, methods of making adjustments on various trucks and motor coaches including air equipment and vacuum boosters, brake troubles and their remedies, service station equipment and, in the last chapter, a description of J-M products. The booklet has 116 pages and contains much useful information concerning brakes and brake systems.

Lathe Work in the Service Station.—A new 32-page hand book on the use of the lathe in the service station has been published by the South Bend Lathe Works, South Bend, Ind. Illustrated sections describe the procedure in servicing brake drums, making drive and axle shafts, finishing pistons, refacing valves and many other practical jobs for the lathe. Information regarding the size and type of lathe to be used for the various kinds of work are included. The standard and special design lathes made by the company are described.